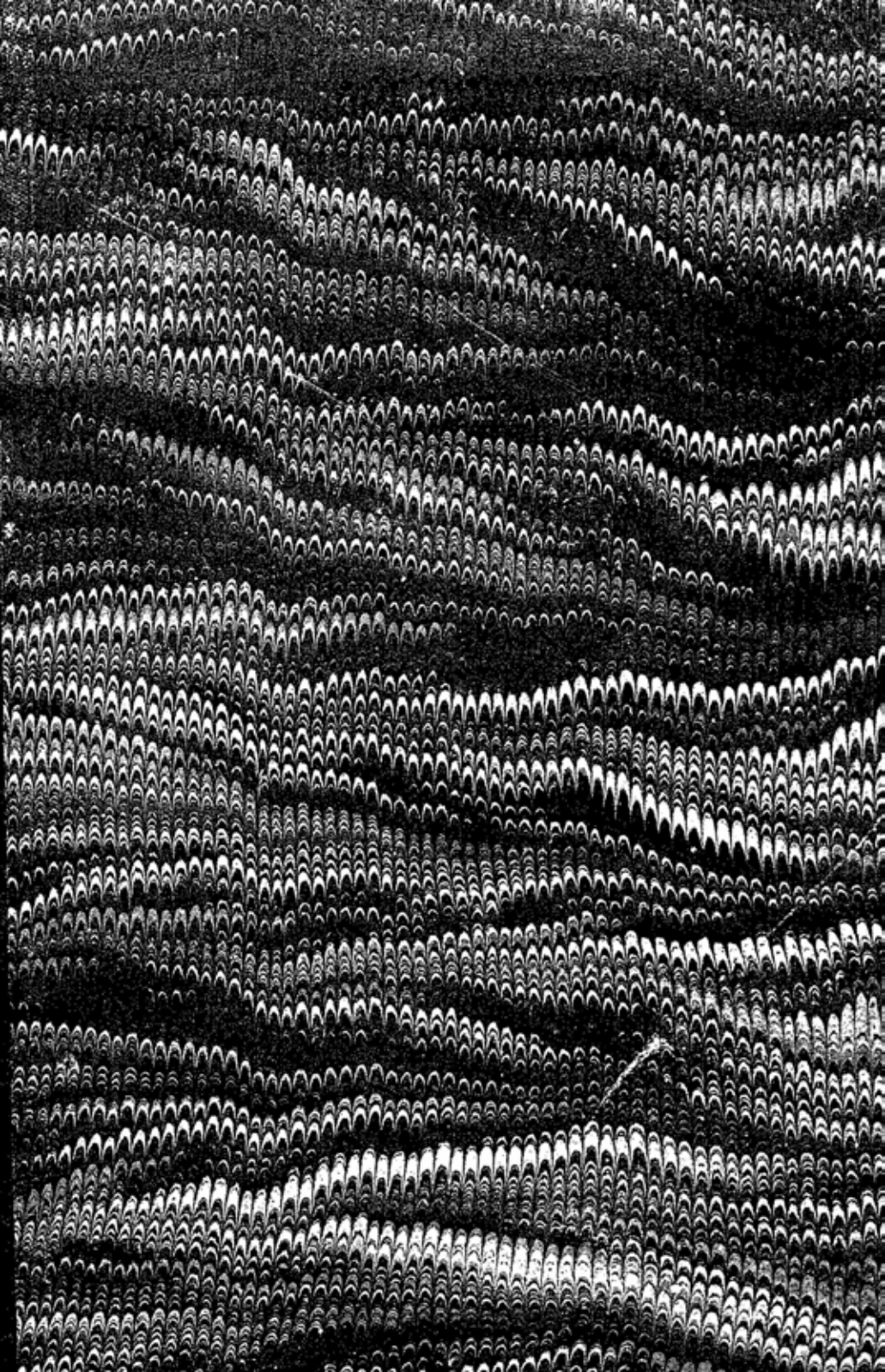

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

EDITED BY

THE HONORARY SECRETARIES.

JANUARY TO DECEMBER,

1880.

CALCUTTA:

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1880.

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[APPENDIX.]

LIST OF MEMBERS

OF THE

ASIATIC SOCIETY OF BENGAL.

ON THE 31ST DECEMBER 1879.

LIST OF ORDINARY MEMBERS.

R. = Resident. N. R. = Non-Resident. N. S. = Non-Subscribing.
L. M. = Life Members. F. M. = Foreign Members.

N. B.—Members who have changed their residence since this list was drawn up, are requested to give intimation of such a change to the *Secretaries*, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the Secretaries.

Members who are about to leave India and do not intend to return, are particularly requested to notify to the *Secretaries*, whether it be their desire to continue as members of the Society, otherwise, in accordance with Rule 40 of the Bye-laws, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1860 Dec. 5.	R.	Abdul-Latíf, Khán Bahádur, Maulawí. *Calcutta.*
1868 Sept. 2.	N.R.	Adam, R. M., Depy. Commissioner, Salt Revenue. *Madras.*
1878 Mar. 6.	R.	Adharlal Sen, B. A., Babu. *Calcutta.*
1860 July 4.	N.R.	Ahmad Khán Bahádur, Sayyid, C. S. I. *Aligarh.*
1872 April 3.	N.R.	Ahsan-ullah, Nawáb. *Dacca.*
1860 April 4.	N.R.	Aitchison, J. E. T., M. D., Surgeon-Major, 29th N. I. *Talagong.*
1871 June 7.	N.R.	Alexander, J. W., Mayo College. *Ajmere, Rajpootana.*
1878 Mar. 6.	N.R.	Allen, G. W., C. I. E, *Pioneer Press, Allahabad.*
1874 June 3.	N.S.	Amír Alí, Sayyid, Barrister at Law.
1865 Jan. 11.	F.M.	Anderson, John, M. D., F. R. S., F. L. S., Superintendent, Indian Museum. *Europe.*
1875 June 2.	R.	Apcar, J. G., Barrister at Law. *Calcutta.*
1875 Feb. 3.	N.R.	Armstrong, J., Surgeon, Beng. Army. Marine Survey Department.
1877 June 6.	R.	Arnold, Henry Kerchever Walter. *Calcutta.*
1877 July 4.	R.	Ashgar Alí Khán, Nawáb Diler Jang Bahadúr, C. S. I., *Calcutta.*
1871 Sept. 6.	N.R.	Atkinson, Edwin Felix Thomas, B. A., C. S., Offg. Acct. General, N. W. P. *Allahabad.*
1869 Feb. 3.	N.R.	Attar Singh Bahádur, Sirdár, C. I. E., M. U. F., Chief of Bhadour. *Ludiana.*
1870 Feb. 2.	N.R.	Baden-Powell, Baden Henry, C. S., Conservator of Forests. *Lahore.*
1873 Aug. 6.	N.R.	Badgley, Major William Francis, S. C., Offg. Deputy Superintendent of Surveys. *Shillong.*
1862 Feb. 5.	R.	Baisák, Bábu Gaurdás, Depy. Magistrate. *Burisal.*
1865 Nov. 7.	F.M.	Ball, Valentine, M. A., F. G. S., Geol. Survey of India. *Geological Survey Office. Europe.*

Date of Election.		
1860 Nov. 1.	R.	Banerjea, Rev. Kristno Mohun, LL. D. *Calcutta.*
1876 June 7.	R.	Baness, John Frederick, Chief Draftsman, Surveyor General's Office. *Calcutta.*
1878 July 3.	N.R.	Barbe, H. L. St. C. S. *Indore.*
1869 Dec. 1.	N.R.	Barker, R. A., M. A., Civil Surgeon. *Bogra.*
1879 Aug. 28	N.R.	Barkley, D. G., M. A., C S. *Jullundur.*
1860 July 4.	R.	Batten, George Henry Maxwell, C.S., Barrister at Law. *Calcutta.*
1859 May 4.	L.M.	Bayley, Edward Clive, The Hon. Sir, B. C. S., K. C. S. I., C. I. E. *Europe.*
1878 June 5.	N.R.	Bayley, C. S., C. S. *Raneegunge.*
1873 Feb. 5.	R.	Bayne, R. R., M. R. I. B. A., Draughtsman, Chief Engineer's Office, E. I. Railway. *Calcutta.*
1864 Sept. 7.	N.R.	Beames, John, B.C.S., Magistrate and Collector. *Hughli.*
1878 Sept. 25.	N.R.	Beighton, T. D., C. S., District and Sessions Judge. *Beerbhoom.*
1862 Oct. 8.	R.	Bernard, Charles Edward, C. S., Secy. to the Govt. of India, Home, Rev. and Agril. Department. *Calcutta.*
1872 Aug. 7.	R.	Beverley, Henry, M. A., C. S., Offg. District and Sessions Judge, 24-Pergunnahs. *Calcutta.*
1876 Nov. 15.	N.R.	Beveridge, Henry, C. S., District and Sessions Judge. *Patna.*
1878 Oct. 4.	R.	Bhakta, Babu Krishna Gopal. *Calcutta.*
1879 Mar. 5.	N.R.	Biddulph, Major J., B. S. C., Officer on special duty. *Gilgit, Kashmir.*
1875 July 7.	N.R.	Black, F. C., Asst. Engineer. *Hamirpur, N. W. P.*
1873 Dec. 3.	R.	Blackburn, J., Manager, Oriental Gas Company. *Calcutta.*
1857 Mar. 4.	L.M.	Blanford, H. F., A. R. S. M., F. G. S., Meteorological Reporter, Govt. of India. *Calcutta.*
1859 Aug. 3.	F.M.	Blanford, W. T., A. R. S. M., F R. S., F. G. S., Depy. Supdt., Geological Survey of India. *Europe.*
1873 April 2.	N.R.	Blissett, T., Superintendent, Telegraph Stores. *Nagpur.*
1879 Aug. 28.	R.	Blyth, W.D., B.A., C.S., Magte., 24-Pergunnahs. *Calcutta.*
1877 May 2.	R.	Bourdillon, James Austin, C. S., Offg. Inspector General of Registration. *Calcutta.*
1876 Nov. 15.	N.S.	Bowie, Major M. M. *Europe.*
1868 Jan. 15.	N.S.	Boxwell, John, C. S., Offg. Deputy Commissioner. *Europe.*
1876 May 4.	N.R.	Bradshaw, Surgeon-Major A. F., Surgeon to the Commander-in-Chief. *Simla.*
1860 Mar. 7.	R.	Brandis, Dietrich, PH. D., Inspector General of Forests. *Calcutta.*
1872 June 5.	N.R.	Brooks, W. E., C. E., Supdg. Engineer, E. I. Railway. *Muddapur.*
1879 Jan. 8.	R.	Browne, J. F., C. S., M. R. A. S., Offg. District and Sessions Judge, 24-Pergunnahs. *Calcutta.*
1866 Nov. 7.	N.R.	Browne, Col. Horace Albert, Commissioner of Pegu. *Rangoon.*

Date of Election.		
1871 Sept. 6.	N.R.	Buckle, H., Deputy Commissioner. *Tounghoo, Burmah.*
1879 Mar. 5.	R.	Buckland, C. E., C. S. *Calcutta.*
1879 April 2.	R.	Calcutta, The Rt. Rev., the Lord Bishop of. *Calcutta.*
1869 Jan. 20.	N.R.	Cadell, Alan, B. A., C. S., Settlement Officer. *Banda.*
1873 Mar. 5.	R.	Cappel, A. J. L, Depy. Director General of Telegraphs. *Calcutta.*
1876 Nov. 15.	R.	Cayley, Surgeon-Major H., Surgeon, Mayo Native Hospital. *Calcutta.*
1875 April 4.	R.	Chambers, Dr. E. W. *Calcutta.*
1879 Nov. 5.	R.	Charles, T. E., M. D., F. R. C. P. *Calcutta.*
1861 Mar. 1.	N.R.	Chaudhuri, Bábu Harachandra, Zamindar. *Sherpur, Maimansingh.*
1874 Aug. 5.	N.S.	Chennell, A. W., Asst. Surveyor, Survey Dept. *Europe.*
1877 Aug. 30.	R.	Clarke, Capt. Henry Wilberforce, R. E., Depy. Consulting Engr., Govt. of India, for Guaranteed Railways. *Calcutta.*
1878 Feb. 6.	R.	Clarke, Colonel the Hon'ble Sir A., R. E., K. C. M. G., C. B, C. I. E. *Calcutta.*
1878 Mar. 6.	R.	Cockerell, The Hon'ble H. A. *Calcutta.*
1877 Mar. 7.	R.	Colvin, The Hon. Bazett Wetenhall, C. S., Member of the Governor-General's Council. *Calcutta.*
1874 Nov. 4.	N.R.	Constable, Archibald, Personal Asst. to Chief Engineer, Railway Dept. *Lucknow.*
1876 Mar. 1.	R.	Crawfurd, James, B. A., C. S., Barrister at Law, Registrar, High Court. *Calcutta*
1877 June 6.	R.	Croft, A. W., M. A., Director of Public Instruction. *Calcutta.*
1874 Mar. 4.	N.R.	Crombie, Alexander, M. D., Civil Surgeon. *Dacca.*
1877 Feb. 7.	N.R.	Crooke, William, C. S., Offg. Joint Magistrate. *Gorakhpur.*
1873 Aug. 6.	R.	Cunningham, David Douglas, M. B., Special Asst. to the Sanitary Commissioner with the Govt. of India. *Calcutta.*
1847 June 2.	F.M.	Dalton, Major-General Edward Tuite, C. S. I, S. C. (retired). Queen Anne's Mansions, St. James's Park, S. W. *London.*
1873 Dec. 3.	N.R.	Dames, Mansel Longworth, C. S., Asst. Commissioner. *Rajanpur, Punjab.*
1877 June 6.	N.R.	Darbhanga Mahárájá of. *Darbhanga.*
1865 June 7.	N.R.	Dás, Rajá Jaykissen, Bahádur, C. S. I. *Moradabad.*
1871 June 7.	R.	Dás, Bábu Ramkrishna. *Calcutta.*
1879 April 2.	N.R.	Dás, Bábu Ram Saran, M. A. *Fyzabad, Oudh.*
1869 April 7.	F.M.	Day, Dr. Francis, F. L. S., F. Z. S. *Europe.*
1856 June 4.	N.S.	DeBourbel, Lieut.-Col. Raoul, R. E. *Europe.*
1872 Aug. 7.	N.S.	Dejoux, P. *Europe.*
1869 Oct. 6.	N.R.	Delmerick, J. G., Extra Asst. Commissioner. *Amballa City.*

Date of Election.		
1873 Jan. 8.	N.R.	Dennys, H. L., Dist. Supdt. of Police. *Sambalpur, C. P.*
1862 May 7.	N.R.	Dhanapati Singh Dughar, Raí Bahádur. *Azimganj.*
1853 Sept. 7.	N.S.	Dickens, Major-General Craven Hildesley, R. A., C. S. I., *Europe.*
1870 May 4.	F.M.	Dobson, G. E., B. A., M. B., F. L. S., *Royal Victoria Hospital. Netley. Southampton.*
1875 Mar. 3.	N.R.	Dodgson, Walter. *Rangpur.*
1878 May 2.	R.	Donaldson, P. *Calcutta.*
1875 Mar. 3.	R.	Douglas, J., Offg. Supdt. of Telegraphs. *Calcutta.*
1879 Feb. 5.	N.R.	Duthie, J. F., Superintendent, Govt. Botanical Gardens. *Saharunpore.*
1873 Aug. 6.	R.	Dutt, Bábu Jogesh Chunder. *Calcutta.*
1877 Aug. 30.	N.R.	Dutt, Bábu Kedarnath, Personal Asst. to the Rajshahye Commissioner. *Rampore Bauleah.*
1873 April 2.	R.	Dutt, Bábu Umesh Chunder. *Calcutta.*
1870 Mar. 8.	L.M.	Edinburgh, H. R. H. The Duke of. *Europe.*
1863 May 6.	N.R.	Edgar, John Ware, C. S., C. S. I., Offg. Magistrate and Collector. *Shahabad, L. P.*
1879 Mar. 5.	R.	Eetveldc, Evan, Consul General for Belgium. *Calcutta.*
1874 Dec. 2.	N.R.	Egerton, The Hon. Robert Eyles, C. S., K. C. S. I., C. I. E., Lieut.-Governor of the Panjab. *Lahore.*
1871 Dec. 2.	R.	Eliot, J., M. A., Meteorological Reporter to Govt. of Bengal. *Calcutta.*
1871 Oct. 4	N.R.	Evezard, Col. G. E. *Deesa, Gujarat.*
1859 Dec. 7.	R.	Fath Alí, Maulawí. *Calcutta.*
1863 Jan. 15.	R.	Fedden, Francis, Asst., Geological Survey of India. *Geol. Survey Office. Calcutta.*
1876 Jan. 5.	R.	Feistmantel, Ottokar, M. D., Palæontologist, Geological Survey of India. *Calcutta.*
1876 July 5.	N.R.	Foulkes, The Rev. Thos., Chaplain. *Bangalore.*
1868 May 6.	N.R.	Field, Charles Dickenson, M. A., LL. D., C. S., Barrister at Law, District Sessions Judge. *Burdwan.*
1879 July 2.	N.R.	Finucane, M., C. S., Settlement Officer. *Darbhanga.*
1869 Sept. 1.	N.R.	Fisher, John Hadden, C. S., Depy. Commissioner. *Jabalpur.*
1872 Dec. 4.	N.R.	Forbes, Major John Greenlaw, R. E., Supdg. Engineer, N. W. P. & Oudh Irrigation Branch. *Lucknow.*
1869 Sept. 1.	N.R.	Fryer, Major G. E., Depy. Commissioner, Tavoy District. *B. Burmah.*
1867 Sept. 4.	N.S.	Fyfe, The Rev. W. C., M. A., Principal, Free Church College. *Europe.*
1873 Dec. 3.	N.R.	Gamble, J. S., B. A., Asst. to Inspector General of Forests. *Darjiling.*
1871 Aug. 2.	N.R.	Gangaprasad, Munshi, Depy. Collector. *Jaunpur.*
1874 July 1.	N.R.	Gardner, David Mason, C. S., Offg. Magistrate and Collector. *Azamgarh.*

Date of Election.		
1879 Mar. 5.	N.S.	Garrett, A. W., M. A., Inspector of Schools, Presy. Circle. *Europe.*
1859 Aug. 3.	L.M.	Gastrell, Major-General James Eardley (retired). 7, *Landsowne Road, Wimbledon.*
1867 Dec. 4.	N.R.	Gay, E. M. A., C. S., Depy. Comptroller General. *Bombay.*
1877 Aug. 30.	R.	Ghosha, Bábu Jnanendra Chandra. *Calcutta.*
1871 May 3.	R.	Ghosha, Bábu Káliprasanna. *Calcutta.*
1877 Dec. 5.	N.R.	Ghosha, Dr. Krishna Dhana. *Rungpur.*
1869 Feb. 3.	R.	Ghosha, Bábu Pratápachandra, B. A. *Calcutta.*
1870 May 4.	R.	Ghoshál, Rájá Satyánand. *Calcutta.*
1875 July 7.	N.R.	Girdlestone, Charles Edward Ridgway, C. S. Resident. *Katmandu, Nepal.*
1861 Feb. 5.	F.M.	Godwin-Austen, Lieut.-Colonel H. H., F. Z. S., F. R. G. S. *United Service Club, St. James', London.*
1862 July 2.	N.R.	Gordon, Robert, C. E., Executive Engineer, P. W. D., *Henzada, B. Burmah.*
1869 July 7.	N.R.	Gordon, James Davidson, C. S., C. S. I., Offg. Chief Commissioner. *Mysore.*
1875 July 7.	N.S.	Gouldsbury, J. R. E. *Europe.*
1863 Nov. 4.	F.M.	Gowan, Major-General J. Y. *Woodlands, Wimbledon, London.*
1879 Jan. 8.	N.R.	Gowan, Capt. W. E., 21st Nat. Infy. *Kuram Valley.*
1877 Nov. 7.	L.M.	Grant, Alexander, M. I. C. E., Director of State Railways. *Europe.*
1876 Nov. 15.	N.R.	Grierson, George Abraham, C. S., Offg. Joint Magistrate. *Madhubani, Darbhanga.*
1861 Sept. 4.	N.R.	Griffin, Lepel Henry, B. C. S., Depy. Commissioner and Offg. Secy. to the Govt. of the Punjab. *Lahore.*
1878 May 2.	N.R.	Griffith, R. *Allahabad.*
1861 Feb. 6.	N.R.	Growse, Frederick Salmon, M. A., C. S., C. I. E., Joint Magistrate. *Bulandshahr, N. W. P.*
1875 Jan. 6.	N.S.	Gunn, John Sutherland, M. B., Surgeon, 4th Bengal Cavalry.
1867 July 3.	N.R.	Hacket, Charles Augustus, Asst., Geol. Survey of India.
1879 Mar. 5.	R.	Harraden, S. *Calcutta.*
1861 Feb. 2.	N.R.	Harrison, A. S., B. A., Principal, Muir Central College. *Allahabad.*
1877 Sept. 27.	R.	Hart, J., Attorney at Law. *Calcutta.*
1875 Mar. 3.	N.R.	Hendley, Dr. Thomas Holbein, Residency Surgeon. *Jaipur, Rájputáná.*
1879 Mar. 5.	N.R.	Herschel, Major J., Survey of India. *Dehra Dun.*
1875 Aug. 4.	N.R.	Hewitt, James Francis Katherinus, C. S., Commissioner. *Chota Nagpur.*
1872 Dec. 4.	R.	Hoernle, Rev. A. F. R., PH. D., Cathedral Mission College. *Calcutta.*
1878 Mar. 6.	N.R.	Hoey, W. *Lucknow, Oudh.*

Date of Election.		
1873 Jan. 8.	L.M.	Houstoun, G. L., F. G. S. *Johnstone Castle, Renfrewshire, Scotland.*
1863 Jan. 15.	N.R.	Howell, Mortimer Sloper, C. S., Joint Magistrate. *Hamirpur.*
1867 Aug. 7.	N.R.	Hughes, T. H., A. R. S. M., F. G. S., Asst., Geol. Survey of India. *Kutní.*
1866 Jan. 17.	N.R.	Hughes, Captain W. G., M. S. C., Depy. Commissioner, Hill Tracts. *Arracan.*
1878 Sept. 25.	N.R.	Hughes, G., C. S., Assistant Commissioner. *Montgomery, Panjab.*
1870 Jan. 5.	R.	Hume, Allan Octavian, C. B., C. S. *Calcutta.*
1872 Dec. 4.	N.R.	Ibbetson, Denzil Charles Jelf, C. S., Asst. Commissioner. *Karnál, Panjab.*
1866 Mar. 7.	N.R.	Irvine, William, C. S., Joint Magistrate. *Ghazipur.*
1871 Mar. 8.	N.S.	Isaac, T. S., C. E. *Europe.*
1874 Feb. 4.	N.S.	Jackson, Surgeon Major Charles Julian. *Europe.*
1878 May 2.	R.	Jackson, The Hon'ble L. S., Judge, High Court. *Calcutta.*
1876 July 5.	N.R.	Jarrad, Lieut. F. W., R. N., F. R. A. S., Depy. Superintendent, Marine Survey Dept.
1879 Mar. 5.	R.	Jarrett, Major H. S., B. S. C., Secy. to the Board of Examiners. *Calcutta.*
1879 Aug. 6.	F.M.	Joest, Herr W. *Cologne.*
1866 Feb. 7.	N.R.	Johnson, W. H., C. E., *Barrackpore.*
1862 Mar. 5.	N.R.	Johnstone, Major James William Hope, Offg. District and Sessions Judge. *Peshawar.*
1867 Dec. 4.	N.R.	Johnstone, Lieut.-Col. James, Political Agent. *Manipur, Assam.*
1878 Aug. 7.	N.R.	Johnstone, P. DeLacy, Depy. Commr. *Sialkote.*
1873 Dec. 3.	N.R.	Johore, H. H., Maharaja of, K. C. S. I. *New Johore, Singapore.*
1873 April 2.	N.R.	Jones, Frederick, C. S., Magistrate and Collector. *Tipperah.*
1875 Nov. 3.	N.R.	Jones, Samuel Simpson, B. A., C. S., Asst. Commissioner. *Rajmehal.*
1869 April 7.	R.	Kabíruddín Ahmad, Maulawí. *Calcutta.*
1878 Mar. 6.	N.R.	Keene, G. H., C. S. *Agra.*
1874 Dec. 2.	N.R.	Khudábakhsh Khan, Maulawí. *Patna.*
1867 Dec. 4.	R.	King, G., M. B., F. L. S., Supdt., Royal Botanical Gardens. *Sibpur, Calcutta.*
1862 Jan. 15.	N.R.	King, W., Jr., B. A., F. G. S., Depy. Supdt. for Madras, Geol. Survey of India. *Geol. Surv. Office.*
1875 Dec. 1.	R.	Knight, Hon'ble J. B., C. I. E. *Calcutta.*
1877 Jan. 17.	N.R.	Kishor, Kumara Radha Deb, Juvráj of Hill Tipperah. *Tipperah.*

Date of Election.		
1877 Sept. 27.	N.R.	LaTouche, James John Digges, B. A., C. S., Offg. Joint Magistrate. *Muttra.*
1878 Aug. 7.	N.R.	Lawrie, Dr. E. *Lahore.*
1879 Dec. 3.	N.R.	Leonard, G. S., Asst. Traffic Supdt., N. B. State Ry. *Saidpur.*
1870 July 6.	N.S.	Lethbridge, E. Roper, M. A., C. I. E. *Europe.*
1879 Mar. 5.	R.	Levinge, H. C., C. E., Joint Secy. to the Govt. of Bengal, D. P. W. *Calcutta.*
1873 Feb. 5.	R.	Lewis, Timothy Richards, M. B., Special Asst. to Sanitary Commissioner with Govt. of India. *Calcutta.*
1864 Nov. 2.	R.	Locke, H. H., Principal, School of Art. *Calcutta.*
1866 Jan. 17.	N.R.	Low, James, Surveyor, G. T. Survey. *B. Burmah.*
1869 July 7.	N.S.	Lyall, Charles James, B. A., C. S., Under Secretary, Govt. of India, Home, Rev. and Agril. Dept. *Europe.*
1876 May 4.	R.	Lyall, John M., Messrs. Lyall, Rennie and Co. *Calcutta.*
1875 Jan. 6.	R.	Lydekker, Richard, Asst., Geol. Survey of India. *Geological Survey Office, Calcutta.*
1870 April 6.	L.M.	Lyman, B. Smith. *Japan.*
1866 June 6.	N.S.	Macdonald, Lieut.-Col. J., B. S. C., Depy. Superintendent of Surveys. *Europe.*
1876 Dec. 6.	N.R.	Macdonald, J. C., Supdt., Tarai District. *Nynee Tal.*
1879 Feb. 5.	N.R.	Macgregor, Lieut. C. R. *Shillong.*
1873 Dec. 3.	R.	McLeod, Surgeon-Major Kenneth, M. D, Secretary to the Surgeon-General, Indian Medical Dept. *Calcutta.*
1848 April 5.	L.M.	Maclagan, Major-General Robert, R.E., F.R.S.E., F.R.G.S. *Europe.*
1879 Aug.28.	N R.	Maconachie, R., C. S., Settlement Officer. *Delhi.*
1865 Dec. 2.	N.R.	Macauliffe, Michael, B. A., C. S., Depy. Commissioner. *Muzaffargarh, Punjab.*
1874 Jan. 7.	N.S.	Magrath, Charles Frederick, B. A., C. S., Joint Magistrate. *Europe.*
1867 April 3.	R.	Mainwaring, Lieut.-Col. George Byres, S. C. *Serampur.*
1876 Dec. 6.	N.S.	Malleson, Col. G. B., C. S. I. *Europe.*
1878 April 3.	N.S.	Mallet, F. R., Geological Survey of India. *Europe.*
1864 July 6.	R.	Mallik, Bábu Devendra. *Calcutta.*
1869 Sept. 1.	R.	Mallik, Bábu Yadulál. *Calcutta.*
1872 Nov. 6.	N.R.	Man, E. H., Asst. Supdt. *Port Blair, Andamans.*
1877 Dec. 5.	N.R.	Mandelli, L. *Darjeeling.*
1869 July 7.	N.R.	Markham, Alexander Macaulay, C. S., Offg. Magistrate and Collector. *Allahabad.*
1873 July 2.	N.R.	Marshall, C. W. *Gonatra, Synthea.*
1873 Aug. 6.	N.R.	Marshall, Lieut.-Col. William Elliot. *Ferozepore.*

Date of Election.		
1877 Feb. 7.	R.	Marshall, Capt. Geo. Fred. Leycester, R. E., Asst. Secy., Govt. of India, P. W. D. *Calcutta.*
1876 Jan. 5.	N.R.	McGregor, W., Supdt. Telegraphs. *Dhubri, Assam.*
1860 Mar. 7.	R.	Medlicott, H. B., M. A., F. R. S., F. G. S., Supdt., Geological Survey of India. *Calcutta.*
1877 Mar. 7.	R.	Medlycott, The Rev. Adolphus Edwin, PH. D., 3, *Cullen Place, Howrah.*
1871 Sept. 6.	N.R.	Miles, Lieut.-Colonel S. B., S. C., Consul-General. *Bagdad.*
1870 July 6.	R.	Miller, A. B., B. A., Barrister at Law, Official Assignee. *Calcutta.*
1874 May 6.	N.R.	Minchin, F. J. V. *Aska, Ganjam.*
1875 Aug. 4.	N.S.	Minchin, Lieut.-Col. C. C., Political Agent and Supdt., Bahawalpur State. *Europe.*
1856 Mar. 5.	R.	Mitra, Rájendralála, Bábu, Rái Bahádur, C. I. E., LL. D. *Calcutta.*
1876 Dec. 6.	N.S.	Mockler, Major E., Political Agent. *Europe.*
1874 July 1.	R.	Molesworth, G. L., C. E., Consulting Engineer to Govt. of India for State Railways. *Calcutta.*
1854 Dec. 6.	R.	Morris, The Hon'ble George Gordon, B. C. S., Judge, High Court. *Calcutta.*
1878 May 2.	R.	Moyle, J. C., Barrister at Law, High Court. *Calcutta.*
1864 Nov. 2.	N.R.	Mukerjea, Bábu Bhudeva, Inspector of Schools. *Chinsurah.*
1879 May 7.	N.R.	Muir, J. W., M. A., C. S., Barrister at Law. *Mainpuri, N. W. P.*
1867 Mar. 6.	R.	Mukerjea, Bábu Pearimohan, M. A., Pleader, High Court. *Uttarpara.*
1876 May 4.	R.	Nash, A. M., M. A., Professor, Presidency College. *Calcutta.*
1865 Feb. 1.	R.	Nevill, G., C. M. Z. S., Indian Museum. *Calcutta.*
1869 July 7.	N.R.	Nursing Rao, A. V. *Vizagapatam.*
1871 July 5.	N.R.	Oates, E. W., C. E., Engineer, P. W. D., Garrison Div., Sittang Canal. *Rangoon, Pegu.*
1879 Mar. 5.	N.R.	O'Brien, E., C. S., Settlement Officer. *Muzaffargarh.*
1874 Oct. 4.	R.	O'Kinealy, The Hon'ble James, C. S., District and Sessions Judge, 24-Pergannahs. *Calcutta.*
1879 Aug. 28.	F.M.	Oldham, Surgeon-Major C. F., F. R. G. S., *c/o Messrs. Grindlay and Co. Calcutta.*
1873 Aug. 6.	N.R.	Olpherts, W. J., C. E., Resident Engr., E. I. Railway. *Benares.*
1873 Aug. 6.	R.	Parker, J. C., Custom House Agent. *Calcutta.*
1862 May 7.	L.M.	Partridge, Surgeon-Major Samuel Bowen, M. D. *Europe.*
1879 Mar. 5.	N.R.	Pawsey, R., C. S., Collector. *Cuttack.*
1871 Dec. 6.	F.M.	Peal, S. E., Manager, Sapakati Tea Estate. *Europe.*

Date of Election.		
1860 Feb. 1.	N.R.	Pearse, Lieut.-Col. G. G. *Bangalore.*
1873 Aug. 6.	R.	Pedler, Alexander, Professor of Chemistry, Presidency College. *Calcutta.*
1864 Mar. 2.	N.R.	Pellew, Fleetwood Hugo, C. S., Offg. Commissioner. *Dacca.*
1865 Sept. 6.	N.R.	Peppe, T. E. *Ranchi.*
1877 Aug. 1.	F.M.	Peters, C. T., M. B., Offg. Civil Surgeon. *Zanzibar.*
1868 May 6.	N.R.	Peterson, F. W., Bombay Mint. *Bombay.*
1835 July 1.	F.M.	Phayre, Lieut.-G., Sir Arthur Purves, K. C. S. I., C. B. *Mauritius.*
1875 Feb. 3.	N.R.	Porter, W., Asst. Supdt. of Police. *Akyab.*
1872 Dec. 4.	R.	Pránnáth Sarasvati, Pandit, M. A., B. L. *Bhowanipur*
1878 Feb. 6.	R.	Prinsep, the Hon'ble H. T., Judge of the High Court *Calcutta.*
1874 Dec. 2.	N.S.	Protheroe, Major M. *Europe.*
1878 Aug.29.	N.R.	Rangoon, Right Rev., Bishop of. *Rangoon.*
1877 May 2.	N.R.	Ravenshaw, Thomas Edw., C. S., Commissioner of Burdwan Division. *Chinsurah.*
1868 April 1.	N.R.	Rái, Rájá, Pramathanáth. *Digapati.*
1876 July 5.	R.	Raye, D. O'Connell, M. D., 1st Resdt. Surgeon, Presidency General Hospital. *Calcutta.*
1877 Aug. 1.	N.R.	Rees, J. C., Asst. Engr. P. W. D. *Thonzai, B. Burmah.*
1871 July 5.	N.S.	Reid, James Robert, C. S. *Europe.*
1872 April 3.	N.R.	Richards, Dr. Vincent. *Goalundo.*
1860 Jan. 3.	N.R.	Rivett-Carnac, John Henry, C. S., C. I. E., Opium Agent. *Ghazipur.*
1868 April 1.	N.R.	Robertson, Charles, C. S., Secretary to the Govt., N. W. P. and Oude. *Allahabad.*
1878 Sept.25.	R.	Robertson, Rev. J., Principal, Doveton College. *Calcutta.*
1865 Feb. 1.	R.	Robinson, S. H. *Calcutta.*
1876 Dec. 6.	N.S.	Rodon, Lieut. G. S., Royal Scots. *Europe.*
1870 Jan. 5.	N.R.	Ross, Major Alexander George, Staff Corps, 2nd in Comd., 1st Sikh Infy. *Dera Ghazi Khan, Panjab.*
1877 May 2.	N.R.	Sandford, W., Assistant Traffic Manager, Nizam's State Railway. *Secunderabad, Deccan.*
1878 Jan. 2.	R.	Sawyer, Capt. H. A., Military Department. *Calcutta.*
1870 May 4.	N.R.	Schlich, Dr. W. *Darjiling.*
1879 May 7.	N.S.	Schroder, J. *Europe.*
1869 Feb. 3.	R.	Schwendler, L., Telegraph Store Department. *Calcutta.*
1879 Feb. 5.	R.	Sconce, Lt.-Col. J., B. S. C. *Calcutta.*
1876 July 5.	N.S.	Scott, Ross, C. S. *Europe.*
1874 July 1.	N.R.	Scully, Dr. John, Residency Surgeon. *Gilgit, Kashmir.*
1874 Dec. 2.	N.R.	Sen, Dr. Rám Dás. *Berhampur.*
1879 Jan. 8.	F.M.	Sewell, R., M. S. C. *Europe.*

Date of Election.		
1878 May 2.	N.S.	Sharpe, C. J. *Europe.*
1879 May 7.	N.R.	Sheridan, C. J., C. E. *Jhansi.*
1878 April 3.	R.	Simson, A. *Calcutta.*
1876 April 5.	R.	Singh, Kumara Kantichandra. *Calcutta.*
1878 Oct. 4.	N.R.	Singh, Rájá Lachman. *Bulandshahar.*
1869 Feb. 3.	N.R.	Singh, Giriprasád, Thákur. *Biswan Fort, Allighar.*
1853 Dec. 7.	N.R.	Singh, Rájá Isvaríprasád, Bahádur. *Benares.*
1859 Aug. 3.	R.	Sinha, Bábu Balaichánd. *Calcutta.*
1877 Aug.30.	N.R.	Singha, Pratápanaráyan, Deputy Magte. *Bankoora.*
1867 April 3.	R.	Sirkár, Dr. Mahendralála. *Calcutta.*
1872 Aug. 7.	N.R.	Skrefsrud, Rev. L. O., India Home Mission to the Santhals. *Dúmka, Santhal Purgunnahs.*
1864 Sept. 7.	N.S.	Sladen, Lieut.-Col. E. B., M. S. C., Commissioner, Arracan Division. *Europe.*
1875 Feb. 3.	N.S.	Smidt, John. *Europe.*
1865 July 5.	R.	Smith, David Boyes, M. D., Medical College. *Calcutta.*
1874 June 3.	N.R.	Smith, Vincent Arthur, C. S., Asst. Settlement Officer. *Hamirpur, N. W. P.*
1879 Mar. 5.	R.	Someren, Capt. G. J. van. *Calcutta.*
1878 Mar. 6.	R.	Souttar, W. M., Chairman of the Corporation *Calcutta.*
1877 April 4.	N.R.	Spens, The Rev. A. N. W., Chaplain. *Sialkot.*
1872 July 3.	N.R.	Stephen, Carr, B. L., Judl. Asst. Commr. *Ludianah.*
1879 Oct. 2.	R.	Sterndale, R. A., F. R. G. S., Asst. Comr. of Currency. *Calcutta.*
1875 July 7.	R.	Stewart, M. G. *Calcutta.*
1876 Aug. 2.	N.R.	St. John, Major Oliver Beauchamp, R. E., C. S. I., Frontier Expeditionary Force. *Quettah Column.*
1861 Sept. 4.	R.	Stokes, The Hon'ble Whitley, C. S. I., C. I. E. *Calcutta.*
1869 Feb. 3.	R.	Strachey, The Hon'ble Sir J., K. C. S. I., C. I. E. *Calcutta.*
1859 Mar. 2.	N.R.	Stubbs, Lieut.-Col. Francis William, Royal Artillery. *Lucknow.*
1864 Aug.11.	R.	Swinhoe, W., Attorney-at-Law. *Calcutta.*
1871 Mar. 1.	R.	Tagore, Bábu Dvijendranath. *Calcutta.*
1871 Jan. 4.	R.	Tagore, Bábu Gunendranath. *Calcutta.*
1868 June 3.	R.	Tagore, The Hon'ble Jotendra Mohun, C. S. I., Maharaja. *Calcutta.*
1865 Sept. 6.	R.	Tawney, C. H., M. A., Principal, Presidency College. *Calcutta.*
1865 April 5.	N.S.	Taylor, R., C. S. *Europe.*
1874 Mar. 4.	R.	Taylor, Commander A. D., late Indian Navy. *Calcutta.*
1860 May 2.	N.R.	Temple, The Hon. Sir R., Bart., K.C.S.I., C.I.E., B.C.S. *Bombay.*
1878 June 5.	N.R.	Temple, Lieut. R. C., S. C., Cantonment Magte. *Fespore, Punjab.*
1876 Feb. 2.	R.	Tennant, Col. James Francis, R. E., F. R. S., C. I. E., Mint Master. *Calcutta.*
1875 June 2.	N.R.	Thibaut, Dr. G., Prof. Sanskrit College. *Benares.*
1869 Oct. 6.	N.R.	Thomson, A., The College, *Agra.*

Date of Election.		
1875 Nov. 3.	N.R.	Thomson, Robert George, C. S., Asst. Commr. *Jhelum, Panjab.*
1847 June 2.	L.M.	Thuillier, Major-Genl. Henry Edward Landor, R. A., C. S. I., F. R. S. *Care of Messrs. Grindlay and Co., 55, Parliament St., London.*
1865 July 5.	N.S.	Tolbort, Thos. Wm. Hooper, C. S., Offg. Deputy Commissioner. *Gujranwala.*
1871 April 5.	F.M.	Trefftz, Oscar. *Care of Messrs. E. D. Keilhorn and Co.*, 16, *St. Mary Axe, London.*
1861 June 5.	L.M.	Tremlett, James Dyer, M. A., C. S. *Europe.*
1872 July 3.	N.S.	Trevor, Lieut.-Col. William Spottiswoode, R.E. *Europe.*
1873 April 6.	R.	Turnbull, Robert, Secretary to the Corporation. *Calcutta.*
1863 May 6.	N.R.	Tyler, J. W., M. D., F. R. C. S., Supdt., Central Prison. *Agra.*
1869 Aug. 4.	R.	Wáhid Alí, Prince Jahán Qadr Muhammad, Bahádur. *Garden Reach.*
1865 Nov. 1.	R.	Waldie, David, F. C. S. *Calcutta.*
1861 May 1.	R.	Walker, Major-Genl. James T., R. E., C. B., F. R. S., Surveyor General of India. *Calcutta.*
1875 April 7.	N.S.	Wall, Dr. Alfred John. *Europe.*
1863 Oct. 7.	R.	Waller, Walter Kerr, M. B. *Calcutta.*
1865 May 3.	F.M.	Waterhouse, Major James, B. S. C., Dy. Supdt., Survey of India. *Europe.*
1874 July 1.	N.R.	Watt, Dr. George, Professor, Hughli College. *Chinsurah.*
1876 Dec. 6.	N.S.	Webb, W. T., M. A., Prof., Dacca College. *Europe.*
1879 Mar. 5.	N.R.	Weekes, A., C. S., Collector. *Chumparun.*
1869 Sept. 1.	R.	Westland, James, C. S., Accountant General. *Calcutta.*
1867 Feb. 6.	N.S.	Westmacott, Edward Vesey, B. A., C. S. *Europe.*
1862 Oct. 8.	N.S.	Wheeler, James Talboys. *Europe.*
1878 Aug.29.	N.R.	Wheeler, P. C., C. S., Asst. Magistrate. *Ghazipur.*
1878 Sept.25.	R.	White, The Hon'ble J. Sewell, Judge, High Court. *Calcutta.*
1875 Feb. 8.	N.R.	Whiteway, Richard Stephen, C. S., Asst. Settlement Officer. *Muttra.*
1878 Aug.29.	N.R.	Whittall, R., Forest Dept. *Toungoo, British Burmah.*
1873 May 7.	N.R.	Williams, George Robert Carlisle, B. A., C. S., Offg. Joint-Magte. and Collr. in charge of Ballia. *Ghazipur.*
1867 Jan. 16.	N.R.	Williamson, Capt. William John, Inspr. Genl. of Police. *Shillong, Khasi Hills.*
1870 Aug. 3.	N.R.	Wilson, Robert Henry, B. A., C. S., Offg. Secy. to Board of Revenue. *Calcutta.*
1878 Mar. 6.	N.R.	Wilson, J. *Gurgaon, Punjab.*
1866 Mar. 7.	L.M.	Wise, Dr. J. F. N. *Rostellan, County Cork. Ireland.*
1867 July 3.	N.R.	Wood, Dr. Julius John, Supdt. of Vaccination. *Ránchi.*

Date of Election.		
1870 Jan. 5.	R.	Wood-Mason, James, Offg. Supdt., Indian Museum. *Calcutta.*
1873 Aug. 6.	N.R.	Woodthorpe, Capt. Robert Gossett, R. E., Asst. Supdt., Survey of India. *Frontier Expeditionary Force. Kurm Valley Column.*

HONORARY MEMBERS.

1821 Mar. 6.	Sir John Phillippart. *London.*
1826 July 1.	Count de Noe. *Paris.*
1834 May 6.	Professor Isaac Lea. *Philadelphia.*
1847 Sept. 1.	Col W. Munro. *London.*
1847 Nov. 3.	His Highness the Nawáb Nazim of Bengal. *Europe.*
1848 Feb. ?.	Dr. J. D. Hooker, R. N., F. R. S. *Kew.*
1853 April 6.	Major-Gen. Sir H. C. Rawlinson, K. C. B. *London.*
1858 July 6	B. H. Hodgson. *Europe.*
1859 Mar. 2.	The Hon'ble Sir J. W. Colvile, Kt. *Europe.*
1860 „ 7.	Professor Max Müller. *Oxford.*
1860 Nov. 7.	Edward Thomas. *London.*
1860 „ 7.	Dr. Aloys Sprenger. *Bern.*
1860 „ 7.	Dr. Albrecht Weber. *Berlin.*
1868 Feb. 5.	General A. Cunningham, C. S. I. *India.*
1868 „ 5.	Professor Bápu Déva Sástri. *Benares.*
1868 „ 2.	A. Grote. *London.*
1871 „ 7.	Charles Darwin. *London.*
1872 „ 1.	Sir G. B. Airy. *London.*
1872 June 5.	Professor T. H. Huxley. *London.*
1875 Nov. 3.	Dr. O. Böhtlingk. *Jena.*
1875 „ 3.	Professor J. O. Westwood. *Oxford.*
1876 April 5.	Col. H. Yule, R. E., C. B. *London.*
1876 „ 5.	Dr. Werner Siemens. *Berlin.*
1877 Jan. 17.	Dr. John Muir. *Edinburgh.*
1879 June 4.	Prof. E. B. Cowell, D. C. L. *Cambridge.*
1879 „ 4.	Dr. A. Günther, V. P. R. S. *London.*
1879 „ 4.	Dr. J. Janssen. *Paris.*
1879 „ 4.	Prof. H. Milne-Edwards. *Paris.*
1879 „ 4.	Prof. P. Regnaud. *Lyons.*
1879 „ 4.	M. E. Renan. *Paris.*

CORRESPONDING MEMBERS.

1844 Oct. 2.	Macgowan, Dr. J. *Europe.*
1856 June 4.	Krämer, Herr A. von. *Alexandria.*
1856 „ 3.	Porter, Rev. J. *Damascus.*
1856 „ 4.	Schlagintweit, Herr H. von. *Munich.*

1856 June.	4.	Smith, Dr. E. *Beyrout.*
1859 „	4.	Tailor, J., Esq. *Bussorah.*
1857 Mar.	4.	Nietner, J., Esq. *Ceylon.*
1858 „	3.	Schlagintweit, Herr R. von. *Giessen.*
1859 Nov.	2.	Frederick, Dr. H. *Batavia.*
1860 Feb.	1.	Baker, The Rev. H. *E. Malabar.*
1861 July	3.	Gösche, Dr. R.
1862 Mar.	3.	Murray, A., Esq. *London.*
1863 July	4.	Barnes, R. H., Esq. *Ceylon.*
1866 May	7.	Schlagintweit, Prof. E. von. *Munich.*
1866 „	7.	Sherring, Rev. M. A. *Benares.*
1868 „	5.	Holmböe, Prof. *Christiania.*

ASSOCIATE MEMBERS.

1865 May	3.	Dall, Rev. C. H. *Calcutta.*
1874 Feb.	4.	Schaumburgh, J., Esq. *Calcutta.*
1874 April	1.	Lafont, Rev. Fr. E., S. J., C. I. E. *Calcutta.*
1875 Dec.	1.	Bate, Rev. J. D. *Allahabad.*
1875 „	1.	Maulawí Abdul Hai, Madrasah. *Calcutta.*

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

* *Rule* 40.—After the lapse of 3 years from the date of a Member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the list of Members.

The following Members will be removed from the next Member List of the Society under the operation of the above Rule.

J. Smidt, Esq. ..... 1876.
R. Taylor, Esq. ..... 1877.

LOSS OF MEMBERS DURING 1879.

By Retirement.

A. H. Anthony, Esq. *Calcutta.*
Lt.-Col. E. G. Clark. *Sultanpur.*
W. Duthoit, Esq. *Shahjehanpur.*
Bábu Uday Chand Dutt. *Serampur.*
Major W. R. M. Holroyd. *Punjab.*
W. Mackay, Esq. *Nusseerabad.*
R. Parry, Esq. *Calcutta.*
H. S. Reid, Esq. *Allahabad.*
Major W. L. Samuells. *Lohardugga.*
E. White, Esq. *Allahabad.*
I. J. Whitty, Esq. *Giridhi.*
C. H. Wood, Esq. *Calcutta.*
A. Wilson, Esq. *Calcutta.*
A. Smidt, Esq. *Calcutta.*

By Death.

Ordinary Members.

Nawáb Amir Alí Khán Bahádur. *Calcutta.*
R. S. Brough, Esq. *Calcutta.*
G. H. Damant, Esq. *Naga Hills.*
R. B. Shaw, Esq. *Mandalay.*
H. C. Sutherland, Esq. *Backergunge.*
Maháráják Mirza Vijayanagram. *Benares.*
G. Robb, Esq. *Calcutta.*
F. L. Beaufort, Esq *London.*
F. Wilcox, Esq. *Manbhum.*
Capt. C. J. F. Forbes. *B. Burmah.*

Honorary Members.

Prof. Henry. *Princeton, U. S.*
M. Stanislas Julien. *Paris.*

By Removal.

Under Rule 40.

Surg.-Maj. J. Ewart.
Lt.-Col. J. G. Forlong.
G. W. Hoyle, Esq.
Dr. W. W. Hunter.
Col. H. Hyde.
Sir W. Muir.
Lord Napier of Magdala.
Isaac Newton, Esq.

[APPENDIX.]

ABSTRACT STATEMENT

OF

RECEIPTS AND DISBURSEMENTS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR

THE YEAR 1879.

STATEMENT, NO. 1.

Abstract of the Cash Account of the Asiatic Society, 1879.

							For detail see
Balance from last account.....				Rs.	7,216	10	6	
Balance of Admission Fee Fund, brought forward					164	13	7	
To Revenue as follows:—								
Admission Fees.....	1,104	0	0					
Subscriptions.....	7,421	13	0					
Commutations.....	190	0	0					
Sale of Publications.....	1,528	5	6					
Interest on investment.....	3,264	4	0					
Miscellaneous.....	250	5	6		....			*a*
Conversazione.....	267	12	0					
					14,026	8	0	
Advances.....					431	6	6	
Petty Stamp Account.....					394	12	0	
Various Funds as follows:—								
Kurz Memorial.....	50	8	0		....			*b*
Blochmann Memorial.....	947	0	0		....			*c*
Piddington Pension.....	370	10	5		....			*d*
					1,368	2	5	
Total, Rs.					23,602	5	0	

							For detail see
By Expenditure as follows:—							
Publications.....	Rs. 6,588	10	4		....		*e*
Library.....	1,608	5	1		....		*f*
Coins.....	403	1	0		....		
Establishment.....	3,933	10	6		....		*g*
Building and Furniture.....	549	15	0		....		*h*
Taxes.....	852	0	0		....		*k*
Charges on investment.....	12	4	10		....		*l*
Contingencies.....	1,145	13	8		....		*m*
Postage.....	422	15	6		....		
Conversazione.....	288	15	8		....		*n*
					15,805	11	7
Advances.....					537	1	1
Petty Stamp Account.....					412	5	0
Investment, Society's Fund.....	2,344	0	0		....		*p*
„ Piddington Fund.....	400	0	0		....		*q*
					2,744	0	0
Various Funds as follows:—							
Stoliczka Memorial.....	273	7	0		....		*r*
Oldham Memorial.....	153	1	6		....		*s*
Kurz Memorial.....	50	8	0		....		*t*
Blochmann Memorial.....	8	13	6		....		*u*
					485	14	0
					19,984	15	8
Balance Cash.....	39	12	2				
„ Bank of Bengal, account No. 1.....	3,570	1	4				
„ Ditto, account No. 2.....	7	7	10				
					3,617	5	4
Total, Rs.					23,602	5	0

Agreed with the recorded accounts.

J. Westland.

J. C. Douglas.

Statement of Detail of Receipts and Charges.

a	Sale of godown and old bricks.....Rs.	140	0	0
	Fines, &c.....	22	2	3
	Recovery of charges on account Oldham Memorial.	87	12	9
	Recovery of price of Coins.....	0	6	6
		250	5	6
b	Subscription for Kurz Memorial.....	50	8	0
c	Subscription for Blochmann Memorial.....	947	0	0
d	Interest on Securities.....	29	4	0
	Excess received on investment.....	2	10	8
	Unexpended balance of Oldham Memorial.....	65	4	9
	Ditto ditto of Stoliczka Memorial.....	273	7	0
		370	10	5
e	Lithographing and Engraving Charges.....Rs.	1,321	0	4
	Printing Charges.....	4,987	2	9
	Paper for Plates.....	84	14	6
	A. Grote, Esq., for publication charges of Mr. Moore's Papers on Lepidoptera, £6-6-8.....	76	7	6
	Freight for sending Journal and Proceedings to England.....	72	4	6
	Overland Carriage on Lithographed Plates from England.....	46	12	9
		6,588	10	4
f	Subscription to the "Calcutta Review.".....	24	0	0
	Ditto to the "Medical Gazette.".....	15	0	0
	Ditto to "Stray Feathers.".....	11	0	0
	Ditto to "Bengal Directory.".....	14	0	0
	Ditto to "Vedarthayatna.....	6	6	0
	Purchase of Books, through Messrs. Trübner & Co.	372	14	6
	Ditto through Mr. E. Leroux.....	31	2	6
	Ditto through Messrs. Friedländer & Sohn.....	116	10	6
	Ditto through H. Georg, Bâle.....	12	12	10
	Ditto through Capt. Legge.....	48	7	3
	Ditto through Messrs. Higginbotham and Co.....	53	4	0
	Ditto in Calcutta.....	466	9	6
	Book-binding charges.....	436	2	0
		1,608	5	1
g	Establishment.....	3,628	0	0
	Pension to Islam Khan.....	36	0	0
	Salary for Cataloguing Mr. Hodgson's Nepalese Sanskrit MSS.....	127	11	9
	Ditto for copying Manuscripts.....	26	15	0
	Ditto of Punkah bearer.....	114	15	9
		3,933	10	6

Statement of Detail of Receipts and Charges.—(Continued.)

h	Repairing the boundary wall..... Rs.	270	0	0
	Repairing and changing Architrave in Staircase.....	148	0	0
	Repairing the Privy-room.....	20	8	0
	Repairing and supplying canes for the matting upstairs.....	18	0	0
	Repairing Glass Cases.....	93	7	0
		549	15	0
k	Police and Lighting rates.....	204	0	0
	House rate.....	468	0	0
	Water rate.....	180	0	0
		852	0	0
l	Difference on purchase (see *p.*).....	17	5	9
	Banking charge on drawing interest.....	7	15	1
	Renewing fee.....	1	0	0
		26	4	10
	Deduct received in December.....	14	0	0
		12	4	10
m	Commission on Subscriptions collected.....	40	13	6
	Meeting charges.....	167	6	9
	Advertising charges.....	48	13	0
	Printing charges.....	309	8	0
	Fee for Stamping Cheques.....	3	2	0
	Stationery.....	248	13	0
	Binding Letter Files.....	15	6	0
	2 Carbon portraits of Hon'ble E. C. Bayley and Major-Genl. H. L. Thuillier.....	70	0	0
	Packing charges.....	17	12	6

	Landing charges		16 7	9
	Petty charges		207 11	2
			1,145 13	8
n	For refreshments. &c.		196 14	0
	Printing charges		12 0	0
	Cart, cooley and conveyance		80 1	8
			288 15	8
p	March. Purchased 1,200 4½ per cent., paid		1,195 6	1
	May. Purchased 500 4½ per cent., paid		490 2	7
	Dec. Purchased 700 4 per cent., paid		675 13	1
			2,361 5	9
	Brought to account as follows:—			
	1,700 4½ per cent. @ 100	1,700 0 0		
	700 4 per cent. @ 92	644 0 0		
			2,344 0	0
	Difference taken on charges on investment		17 5	9
q	March. Purchased 400 4½ per cent., paid		397 5	4
	Brought to account as follows:—			
	400 4½ per cent. @ 100		400 0	0
	On receipt side (see *d*)		2 10	8
r	Unexpended balance transferred to Pension Fund		273 7	0
s	Repaid to Society (see *a*)		87 12	9
	Unexpended balance transferred to Pension Fund		65 4	9
			153 1	6
t	Cost of enlarged portrait of Mr. Kurz		50 8	0
u	Printing charges and Postage		8 13	6

STATEMENT, NO. 2.

The following is the "State" of the Society upon 31st December, 1879.

ASSETS.				LIABILITIES.			
Personal account	Rs. 4,744	3	4	Personal account	Rs. 119	7	11
Cash	3,617	5	4	Servants' Pension Fund	1,007	11	4
Invested Funds	1,37,468	0	0	Blochmann Memorial Fund	1,268	4	6
					2,395	7	9
				Balance	1,43,434	0	11
Total, Rs.	1,45,829	8	8	Total, Rs.	1,45,829	8	8

The Detail of Cash is as follows:—

In hand, as per Cash Book	Rs. 39	12	2
In Bank, account No. 1	3,570	1	4
„ account No. 2	7	7	10
	Rs. 3617	5	4

Accounts Nos. 1 and 2 will henceforth be amalgamated.

The detail of the invested balance is as follows:—

Society's, 4 per cent. of 1879, 5,700 @ 92	Rs. 5,244	0	0	
4 per cent. of 1865, 4,000 } @ 92	4,324	0	0	
4 per cent. of 1842-43, 700 }				
4½ per cent. of 1878-79, 1,27,900 @ 100	1,27,900	0	0	
				1,37,468 0 0

J. WESTLAND.
J. C. DOUGLAS.

STATEMENT, NO. 3.

Abstract of the Cash Account of the O. P. Fund for 1879.

Balance from last account				Rs.	3,848	3 0
To Revenue as follows:—						
Government grant	9,000	0	0			
Sales	3,002	6	7			
Miscellaneous	12	0	0			
Advances	94	6	0			
Petty Stamp account	154	3	0			
					12,262	15 7
Total, Rs.					16,111	2 7

By Expenditure as follows:—						
Publications—						
Sáma Veda Sañhitá				Rs.	464	14 3
Akbar Namah					1,128	2 0
Prithiráj Rásu					236	0 0
Gobhiliya Grihya Sútra					877	0 0
Chaturvarga Chintámani					1,674	8 6
Vayu Puráṇa					1,059	0 0
Agni Puráṇa					184	13 0
Taittiríya Sañhitá					548	3 0
Tabaqat-i-Naçiri					1,443	1 8
Mimáñsá Darsana					225	2 0
Bhámatí					171	13 6
					8,012	9 11
Establishment					1,176	0 0
Catalogue					480	0 0
Miscellaneous					190	5 6 *a*
Advances					134	6 3
Petty Stamp Account					184	3 6
Postage					116	3 6
					10,293	12 8
Balance Cash					79	4 1
„ Bank of Bengal					5,738	1 10
					5,817	5 11
Total, Rs.					16,111	2 7

Agreed with the recorded accounts.

J. WESTLAND.
J. C. DOUGLAS.

The Detail Statement of charges for O. P. Fund for 1879.

a Advertising charges	Rs.	130	0	0
Freight for sending books to England		35	8	0
Commission on collecting bills		1	8	6
Book-binding charges		18	6	0
Fee for Stamping Cheques		3	2	0
Petty charges		1	13	0
	Rs.	190	5	6

STATEMENT, NO. 4.

Assets and Liabilities of the Asiatic Society, O. P. Fund, on 1st January, 1880.

ASSETS.				LIABILITIES.				
Personal account	Rs.	1,164	5 11	Personal account.				
Cash, and Bank		5,817	5 11	„ Dr. Muir's	Rs.	898	10 0	
				„ Government, N. W. P.		1,040	0 0	
				„ Miscellaneous		38	4 0	
								1,976 14 0
				Balance				5,004 13 10
Total, Rs.		6,981	11 10	Total, Rs.		6,981	11 10	

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STATEMENT, NO. 5.

Abstract of the Cash Account Conservation of Sanskrit MSS. Fund for 1879.

[illegible]nce from last account				Rs.	758	9	5	
To Revenue as follows:—								
Government grant		4,800	0	0				
Miscellaneous		43	6	0				
Advances		1,009	0	0				
					5,852	6	0	
Total, Rs.					6,610	15	5	

By Expenditure as follows:—								
Purchases and copying				Rs.	1,422	15	0	
Salaries and allowance					1,548	8	0	*a*
Miscellaneous					785	13	3	*b*
Advances					1,309	0	0	
Postage					4	12	6	
							5,071	0 9
Balance Cash					11	8	6	
„ Bank of Bengal					1,528	6	2	
							1,539	14 8
Total, Rs.							6,610	15 5

The Detail Statement of charges for Conservation of Sanskrit MSS. Fund for 1879.

a Salary for preparing Catalogue of Sanskrit MSS.	Rs.	360	0	0
Ditto translating ditto		240	0	0
Ditto travelling Pandit		550	0	0
Travelling allowances		164	8	0
Assistant Secretary's bonus		150	0	0
Salary for bearer		84	0	0
	Rs.	1,548	8	0
b Printing charges of Notices of Sanskrit MSS.		748	0	0
Petty charges		37	13	3
	Rs.	785	13	3

ASSETS.					LIABILITIES.				
Cash	Rs.	1,539	14	8	Balance	Rs.	2,339	14	8
Advanced to Dr. R. Mitra		600	0	0					
„ „ N. Mookerjee		200	0	0					
	Rs.	2,339	14	8		Rs.	2,339	14	8

J. Westland

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR JANUARY, 1880.

The monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th instant, at 9 o'clock P. M.

H. B MEDLICOTT., ESQ., M. A., F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed:—

The following presentations made since last meeting were laid on the Table—

1. From the Government of India, Home, Revenue and Agricultural Department,—Scientific Results of the Second Yarkand Mission; (1) *Syringosphæridæ*, by Professor P. M. Duncan, and (2) *Lepidoptera*, by F. Moore.

2. From the Author,—Note on Elephants (supplementary to that of the 3rd April 1879); by Captain H. W. Clarke.

3. From the Cherbourg Society of Natural Science,—Catalogue of their Library, Part II; by Aug. le Jolis.

4. From the Zoological Society of London,—List of the Vertebrate Animals now or lately living in the Gardens of the Zoological Society of London. Seventh Edition.

5. From the Author,—Metrical Translations from Sanskrit Writers; by J. Muir.

6. From the Superintendent, Marine Surveys,—(1) Chart of the Mutlah River to the Chittagong Coast, (2) Chart of Tuticorin Roadstead and Harbour.

7. From Die Verein für Naturkunde in Cassel,—Catalogue of their Library.

8. From Dr. G. Leitner,—Proceedings of the Anjuman-i-Punjab in connexion with the proposed Vaccination Bill and Dr. Cunningham's Sanitary Primer.

9. From the Royal Zoological Society of Amsterdam,—A number of their publications, the names of which will be found in the Library List.

10. From the Madras Government, Education Department,—A Classified Index to the Sanskrit MSS. in the Palace at Tanjore; by A. C. Burnell.

11. From the königliche bayerische Akademie der Wissenschaften in München,—Ueber Calderons Sibylle des Orients; by W. Meyer.

The following gentlemen, duly proposed and seconded at the last Meeting, were ballotted for and elected Ordinary Members—

Fred. E. Pargiter, Esq., B. A., C. S.
Lieut. W. H. Johnstone, R. E.
Bábu Govinda Kumara Chaudhuri (re-election).
H. Kisch, Esq., C. S.
J. W. Parry, Esq.

The following Gentlemen were announced as candidates for ballot at the next meeting—

1. Beharilal Gupta, Esq., B. C. S., proposed by Dr. Rájendralála Mitra, seconded by Bábu P. C. Ghosha.

2. The Hon'ble Arthur Wilson, proposed by H. B. Medlicott, Esq., seconded by J. Crawfurd, Esq.

The SECRETARY reported that Mr. R. Parry had intimated his desire to withdraw from the Society.

The SECRETARY announced that a limited number of coloured copies of Messrs. Moore and Hewitson's "Descriptions of new Indian Lepidoptera in the collection of the late Mr. W. S. Atkinson" were available for sale to Members at Rs. 4-8 per copy and to Non-Subscribers at Rs. 6 per copy.

With reference to the Ethnological Queries put by Professor Schaffhausen of Bonn to Mr. H. Rivett-Carnac, and which were published in the August Proceedings, the Secretary read a letter from Mr. W. King, dated 9th December, in which he says:

I have just seen in the Proceedings, Asiatic Society of Bengal for August 1879, the series of questions put to Mr. H. Rivett-Carnac by Professor Schaffhausen of Bonn.

Perhaps it may not be too late to let it be known that I saw two Yanádi men (of an aboriginal tribe living about Sriharikota and the Palicah Lake) produce fire from the friction of wood in (I think) 1862. It was a rainy day, and within a short distance of a village whence fire could easily have been found: yet these men worked industriously for

about half an hour until the fire was produced. The man sat on his haunches, with a small horizontal bar of wood, kept in its place underneath his feet. There was a small hole made or worn in this bar, and in this was inserted the point of a vertical stick which the men alternately rolled between the palms of their hands. Under this rapid friction of the vertical stick in the small hole in the horizontal one carbonized dust gradually collected, when at last a first spark of fire was produced which the men gently blew into a flame around a piece of rag which they held close to the bit of carbonized dust. I neglected to ascertain the kinds of wood used; but the men had evidently had them for some time in their possession.

The PRESIDENT exhibited some Geological Specimens from Afghánistán and said—

At the June and August meetings of the Society specimens were exhibited from the hills between Dera Ghází Khán and the Pishin Valley, on the Thal Chotiáli route, passing north of Quetta. The presence of bitumen and nummulitic rocks was proved; and there were no specimens that might not belong to these formations. There were also many samples of baser irruptive rocks, and some partially metamorphosed rocks, but which may only be connected with the contact of the trappean masses.

The collections now to be noticed are from the region of the Safed Koh. There are 12 specimens sent by Major Tanner from the north or Gandamak side of the range, and three by Mr. Scott from the same ground, one being from the summit of Sikarám the highest peak (15,620 feet) of the range. Both of these contributors are officers of the Topographical Survey. A larger collection, numbering some 40 specimens, was made by Dr. J. E. Tierney Aicheson, attached as botanist to the Kuram column; these are from the southern or Peiwar Kotal flanks of Sikarám. The two latter collections were communicated through Mr. A. B. Wynne, of the Geological Survey.

From all these specimens we soon form a rough idea of the geology of the ground. The ridge of the Safed Koh at Sikarám, and all the country to the north seems to be formed of much altered rocks, though with only few samples of the extreme gneissic type. There is a remarkable preponderance (as represented by these specimens) of magnesian and calcareous rocks; amongst them come very fine white montitis and stratitis. The culminating point of the Safed Koh is approximately formed of pure white quartzite, but the range most likely owes its name to its snow beds. The white rock from which Safed Sang takes its name is a beautiful statuary marble.

On the western flanks of Sikarám, at elevations of 10,000 feet, quite unaltered shales, with impressions of Algæ, and similar rocks from the south side, occur among Dr. Aicheson's specimens. There are no observations to suggest what may be the stratigraphical solutions of these highly contracting series of rocks. The only clue as to age for any of these formations is in a large pebble of limestone found in the Shalinar stream on the east side of the Peiwar Kotal; it is a lithodendroid coral, testifying to the presence of triassic or carboniferous strata in the vicinity.

A serpentinous trappean rock or diallagic serpentine seems to be in force about Ali Khel.

Beside these, Dr. Aicheson brought to notice a copper ore found on Karátiza hill, near the Shuturgardan. It was forwarded officially for opinion, the presence of some metallic copper having given rise to the impression that the ore was peculiarly rich. This was not confirmed by analysis; the total yield of metal being only 26 per cent. It is a very mixed ore, with much silicious matter finely disseminated.

From the northern side of the range, again, specimens were sent by Major Stewart, of the Corps of Guides, from the so-called ruby-mine near Jagdalak. It appears that the gems found there were highly prized by the natives, a guard being kept constantly at the mine by the Amir, and it was naturally thought that it might prove a source of revenue. However this may be, it is certain that the gem is not the true ruby, but only spinel-ruby, which is very little thought of in Europe, its value being not more than a tenth that of the true oriental ruby, or red sapphire. The spinel can generally be most readily distinguished by its carmine-red colour and its crystalline form, in regular octahedrons, as is well seen in the specimens furnished by Major Stewart. A good specimen of the rock in which it occurs was also sent; it is a largely crystalline micaceous limestone.

I have also laid on the table a specimen of beautiful verdeantique marble, or calcareous serpentine, brought by Major Biddulph from Shigar in Ladakh where it is continuously worked and sold as "yessham" or jade.

Dr. RÁJENDRALÁLA MITRA exhibited some very old palm-leaf MSS. and some ancient coins.

Dr. Mitra said that, in his paper on the Pála and the Sena Rájás of Bengal, he had occasion to advert to the era of Lakshmaṇa Sena, and to refer to certain Sanskrit MSS. which were dated in that era. He had since been able to obtain some MSS. of the kind as also some others of very old dates. These he submitted as proofs of the era in question having been current all along from the time of its initiation to a very recent date. The codices were written with ink on palm-leaf *(Corypha elata)*, and appeared very much decayed and crumbling; but the writing was clear and fairly

correct. One of the MSS. was dated the 6th of Srávana ল৲ স৲ 1509, but the cypher was obviously a mistake, for 1509, would make it correspond with A. D. 2614, which would be absurd. Nor is the mistake an uncommon one; ignorant copyists very often put in a dot to indicate hundred and then put in the unit, though correctly in the decimal system the unit figure should occupy the place of the dot. Dr. Mitra had seen many instances of the kind in the pagination of MSS. Taking the date at 159 of the Lakshmaṇa era it would correspond with 1265 of the Christian year, and the MS. would consequently be 615 years old. That would make it the oldest Bengali record that had yet been discovered. The place where the MS. was written is not mentioned, but it was found in the village of Nisiḍágaḍ, Post Bayinchi, in the Burdwan district, and the writing was of the pure Bengali, and not of the Maithilí style. If these facts could be accepted as proofs of its having been written in Burdwan, it would show that the era was at the time current over a much larger area than that of Tirhoot. It showed also that the Bengali character written over six hundred years ago, was very much like what it was in the last century. The subject of the record was a commentary on the *Pratyaksha Khaṇḍa* of Gaṅgeśa, by Jayadeva Miśra, and this proved that the commentator lived some time before the date of the MS.

The second MS. laid on the table was the *Mitákshará* commentary on the law of Yájñavalkya. According to its colophon it was copied by Śrínátha Śarmá, in the village of Bhaṇḍnája, on the 4th of the wane in the month of Vaiśákha, ল৲ স৲ 399 = A. D. 1506. This gives to the codex an age of 373 years. The third MS. was the *Dharmaratna* of Jímutaváhana, and bore date Śaka 1417 = A. D. 1499, which gives it an age of 383 years. It is a work of considerable repute, but exceedingly rare. The last was the *Śúdropaddhati* of Apipála, written in the Samvat year 1442 = A. D. 1385, *i. e.*, 495 years ago. Dr. Mitra had not seen the work cited in current digests on the religious duties of the Śúdras of which it treats, but it appears to be a very comprehensive and well-written summary of all the laws current on the subject.

Dr. Mitra also exhibited a small collection of coins lately obtained by him from money-changers at Bombay. It included an Egyptian gold-piece of 1277 H.; 10 and 20 cent pieces of Hongkong, Italy, Mauritius, France, Spain and Mexico; a 5-Frank piece of Napoleon I, (1812); a 50-Lepta of Greece; a 50-Koptek of Austria; a ½ guilder of Netherlands India; and rupees of most of the native States of India. Of old coins there were two good rupees of Muhammad bin-Tughlak; several Bull and Horsemen tankás of Chahaḍa Deva, Syalapati Deva, and Shams-uddín Altimish; half a dozen specimens of the silver currency of the Khálifs; of several Sassanians; and

some Parthians. Among the last were drachmas of Arsaces Artabanus, and Arsaces Sinatroces. Of the former there were four specimens with the legend in perfect preservation thus—βασιλευς βασιλευν ἁρσικου Δικαιου ενεργετου επιφανίου φιλελλιχος, with the monogram Ā under the extended bow of the king. Of the latter there was an only specimen and one word in its legend was illegible. It had no monogram. Its legend runs thus—βασιλευς Μεγαλου αρσικου φιλοπατρου —— επιφανίου φιλελλιχος.

Mr. H. F. BLANFORD exhibited an actinometer of a new form, the invention of Professor Balfour Stewart, recently constructed for the Alipore Observatory. Also the older forms of actinometer invented by Herschell, Pouillet (the Pyrheliometer) and Hodgkinson, and described the object and principle of these instruments.

An actinometer is essentially a thermometer, having in general a large bulb and a very contracted column; and its object is to measure the quantity of heat, (or, to speak more strictly, the radiation) received from the Sun in a certain definite interval of time (which may be half a minute or more) by observing the expansion thereby produced, which is a function of the quantity of heat received, and the mass and nature of the fluid heated. An ideally perfect actinometer would be one which should completely absorb and convert into heat all the radiation which falls on its exposed surface, while it should remain entirely unaffected by radiation to or from bodies around, other than the Sun, and by any change of temperature in the air or other medium in contact with it. But this, of course, cannot be realized.

In Professor Balfour Stewart's actinometer, the disturbing influences are reduced to a minimum, so far as is compatible with simplicity of arrangement and working. The thermometer which is mercurial, having a bulb of about the size and form of a walnut, is enclosed in a massive hollow cube of brass, perforated by a small hole in the middle of one side, which can be closed by a sliding screen, and through which a beam of the sun's rays concentrated to a focus by a lens 2½ inches in diameter is directed on the thermometer bulb. With the exception of this small aperture, a massive brass wall blackened internally completely surrounds the thermometer and screens it from the variable radiation of surrounding objects, and the chamber itself is also protected by a casing of felt and an outer coating of polished brass plates. The instrument is mounted on a massive iron stand affording a motion both in azimuth and altitude. In use the instrument possesses the great advantage of simplicity over all other forms of actinometer. Having been placed in position, so that the Sun's image in the focus of the lens falls on the shutter immediately over the aperture already noticed, the shutter is withdrawn, and the concentrated beam allowed to fall on the thermometer bulb during the

space of two minutes by the chronometer; the temperature being observed at the instant of withdrawing the screen and again on closing it. There is, of course, an unknown loss of heat by absorption in the lens and reflection from its surface, so that the measurement obtained is only a relative and not an absolute determination, but the same must be said of other forms of actinometer, and meanwhile an instrument that affords a good relative measurement and is so simple in manipulation is a very important addition to our means of observation.

Dr. HOERNLE exhibited 10 copper coins of the Mitra dynasty, kindly sent by Mr. H. Rivett-Carnac, for the inspection of the Society. In a note accompanying the coins, Mr. Rivett-Carnac says, that he obtained them through Mr. H. Pratt from the vicinity of Rámnagar, in the Bareilly District, and that Mr. A. C. Carlleyle, of the Archæological Survey, to whom he sent them for inspection, read the legends and, at his request, prepared a detailed description of the coins, to be read before the Society. The description is entitled—

Coins of the Sunga or Mitra Dynasty found at Rámnagar or Ahichhatra, the ancient Capital of North Panchála in Rohilkhand; the property of H. RIVETT-CARNAC, ESQ., C. I. E., F. S. A., &c. *Described by* A. C. CARLLEYLE, *of the Archæological Survey of India.*

(Abstract.)

After some introductory remarks on the wide extent of the sway of the Mitra dynasty, the author mentions that he himself obtained a considerable number of these coins from excavations at Bhuila, the site of the ancient city of Kapilavastu, in the Basti District; but the coins obtained by Mr. Rivett-Carnac (about 110) are mostly of a much larger size, and several bear names of kings which are either new or of rare occurrence; such as Bhadraghosa, Phaguni-mitra, Srayań-mitra and Anu-mitra. Taking into account the numerical proportion, in which the coins of the various kings were found in the hoard, as well as the older or later form of the alphabetic characters of the legends and some other peculiarities, the author proceeds to arrange the coins in the following chronological order: 1, Bhadraghosa (5 coins), 2, Srayań-mitra (7); 3, Bhanu-mitra (10); 4, Agni-mitra (11); 5, Anu-mitra (1); 6, Phaguni-mitra (28); 7, Bhúmi-mitra (34); 8, Indra-mitra (2). The impressions on these coins are very much alike. The Obverse always shows a square depression, caused by a die, containing the legend (the mere name of the king in the genitive case), with three symbols above, arranged in a horizontal row. These symbols are said to be the Bodhi-tree, Linga and two serpents entertwined. The Reverse shows

either a figure of Buddha as teacher, or the Buddhist symbols of the "Sangha" and the Law (a wheel).

This paper will be published in the Journal, Part I.

Dr. Hoernle stated that he had shown the coins to General Cunningham, who had empowered him to communicate to the meeting that while generally agreeing to Mr. Carlleyle's description of the coins, he took exception to two of his readings. Instead of Srayaṇ-mitra and Anu-mitra, as read by Mr. Carlleyle, he thought the names were Súrya-mitra* and Ayu-mitra. Dr. Hoernle also gave some account of what was hitherto known about the Mitra-Dynasty from Sanskrit sources, especially the Vishṇu Puráṇa and the Malavikágni-mitra; pointing out the wide divergence between names of the the Mitra kings as found on the coins and as handed down in those Sanskrit works. He added that the first coin of these kings (one of Agni-mitra) was noticed by General Cunningham, as far back as 1852 (see Lassen, Ind. Ant. II, 47). Since then coins of this dynasty had been found from time to time; and General Cunningham had told him, that he possessed a considerable number of coins of Indra-mitra, who is placed at the bottom of his list by Mr. Carlleyle on account of the paucity of his coins.

Dr. Rájendralála Mitra said, the coins laid on the table were very interesting, and the acknowledgements of numismatists were due to Mr. Rivett-Carnac for the opportunity he had given them of examining the coins. The first to notice a Mitra coin was the distinguished antiquarian General Cunningham, and Sir Edward Bayley subsequently got two or three specimens; but so large a collection as that of Mr. Rivett-Carnac had never before come to notice. It supplied many links, hitherto missing, of a dynasty which was known only from casual mention of two or three names in Puráṇas and works of fiction, like the 'Málaviká Agnimitra,' and the time, he hoped, would soon come when the chronology of the dynasty would be settled satisfactorily. He took exception, however, to the classification which had been adopted by the author of the paper read, and to the principle on which that classification had been based. The principle was an arithmetical one, and priority and posteriority were regulated by the number of coins found in the trove. That king who was represented by a single specimen of his coinage was accepted as the oldest; he was reckoned the second, two of whose coins had come to hand; and the largest number of coins represented the latest king. Dr. Mitra thought this principle to be a fallacious one, calculated to mislead at every step. A hundred different circumstances might lead to a trove containing more coins of one reign than of another, without any reference to their age. To take an instance ready at

* In a communication from Mr. Carlleyle, received after the meeting, he says, that he now also reads the name Súrya-mitra.

hand, he said, the packet of miscellaneous coins he had laid on the table contained one coin each of Victoria and Isabella—a 20-cent piece of Mauritius and a 40-cent piece of Spain,—and five coins of the Arsacidan dynasty, and six of the Sassanians. Were the packet treated as a trove, or to become a trove under some circumstance or other, the principle, faithfully worked out, without reference to history, would result in the conclusion that the Queen-Empress Victoria and Isabella were the oldest, that the Parthians were much later than these, and that the Sassanians were the most recent. A principle that would lead to such a conclusion was open to the gravest objection. The author of the paper had himself felt this objection, and had met it by adding that he had supplemented it by his knowledge of the gradual changes which the Laṭ character had undergone in course of time. Dr. Mitra took exception to this also, for he thought no one, however well-versed he may be in the old character, could, from the appearance of three or four smudgy letters on two coins, say which was the anterior and which the posterior. The total number of Laṭ inscriptions was so exceedingly limited that it was impossible from a study of them to acquire such a test of the gradual changes which letters undergo in course of time as would suffice to determine the difference in the writing of two consecutive reigns. The coins were all of copper, bearing letters varying from one-tenth to one-twentieth of an inch in size, more or less covered with rust, and otherwise defaced; the coin of the so-called Anu Mitra was the smallest, and the letters on it were one-twentieth of an inch in size, and to attempt to judge of palæographic changes from them was simply impossible. With far ampler means and opportunities, one in a hundred well-educated persons, would not venture to determine the difference in the shape of the letters forming the words ONE RUPEE on the coins of William IV and Victoria. Dr. Mitra had seen only the coins laid on the table, and in them he could trace no such palæographic difference as would justify him in arranging them chronologically.

Dr. Mitra also took exception to the reading of two of the names. One of these he had communicated to General Cunningham whose revised reading had been announced by the Society. The other was that of Anu Mitra, which he read Bhánu Mitra. The letter *a* in the Laṭ character was very like the English K reversed thus ꓘ, with the projecting arms slightly curved, and the *bh* was like the same English letter with the upper arm removed. Now, among Mr. Rivett-Carnac's coins there was one which was unquestionably of Bhánu Mitra, and in the other which Mr. Carlleyle took for Anu Mitra, the upper part of the first letter was smudgy and covered with rust, and only the lower part was clear, and from that no one could fairly restore the upper part, and make a new name of it.*

* Examined with a high-power magnifying glass a few granulations appeared be-

Dr. Hoernle said, that he quite agreed with Dr. Mitra, that the principle of determining the chronology of the dynasty by the numerical proportion of their coins in a particular hoard, which Mr. Carlleyle had put forward, was not a very safe one. It certainly required to be worked with very great care; and many other circumstances also would have to be taken into account, in order to control the results obtained by the application of that principle. Mr. Carlleyle himself, however, admitted as much in his paper. In the case of the supposed hoard containing coins of Queen Victoria of England, Queen Isabella of Spain, and of the Arsacidan and Sassanian Dynasties, there would be no difficulty for numismatists to determine the relative age of the dynasties by other considerations, quite independent of such a trivial circumstance as the numerical proportion of the coins in the hoard. But when it was the case of a single dynasty, the reigns of which did not range over much more than a century and about which as yet so little was known historically, every circumstance, however trivial it might be, was of importance; though no doubt sufficient judgment and discrimination, as Mr. Carlleyle said, would have to be used to apportion to each circumstance its relative importance. Mr. Carlleyle's chronological arrangement could only be looked upon as a provisional one, which would have to be verified or modified by information derived from coins found in other hoards. With regard to the reading Bhánumitra (instead of Anumitra), proposed by Dr. Mitra, Dr. Hoernle stated that he had carefully examined the coin, which happened to be one of the best preserved of the collection, and he fully concurred with General Cunningham in his reading of the first letter as *a* (not *bh*); the upper arm of the letter being quite distinctly visible to his eye.

The coin in question was handed round and several who were present stated that they could recognize the upper arm of the letter.

A letter was read from Lieut. R. C. Temple on an Inscription at Sultánpúr in Kulu-Elí in which he writes:

"I see a translation of the Nirmand Inscription in Kulu by Dr. R. Mitra in the August Proceedings of this Society. I got a copy of it myself about 1½ years ago and sent it to Dr. Burnell, but do not know what has happened to it since. There is another Kulu Inscription which it might be worth while copying and translating. It is in the Chaugán at Sultánpúr in Kulu and on a large stone near the civil offices. I was never able while serving in the Kángra Valley to get at it myself, and made several unsuc-

hind the first letter; but they are perfectly detached, and seem never to have formed a part of the letter. If they be joined they would not produce an oblique line such as is required to produce the upper oblique spur of the Palí भ. R. M.

cessful attempts to get others to copy it for me. The Society may, however, have means of having it copied, and I therefore write to let them know of its existence. It is said locally to relate to the construction of the Kúl or open artificial watercourse in its neighbourhood."

"I send herewith some specimens obtained in 1878 of the local "Pahári" alphabet still employed by the Kángra Baniahs and people of that class in the valley, as they may be of use. I would point out the position of short "i" as being *after* instead of *before* the consonant it qualifies as in ordinary Nágari, and the representation of long "í" by *two* strokes following the consonant, *e. g.*, ग। = गि and गाा = गी.

The following papers were read—

1. *Note on some Ladák Mammals.—By* R. Lydekker, B. A.

This paper is published in the Journal, Part I.

2. *On the Great Siva Temple of Ganjai-Koṇḍapuram, in the Trichinopoly District.—By* Lieut.-Col. B. R. Branfill. *Communicated by* Major-General J. T. Walker, R. E., C. B., F. R. S. *Surveyor-General of India.*

(Abstract.)

The temple which is described in this paper is situate in the extreme E. N. E. part of the Trichinopoly District, 20 miles S. W. from Chidambaram. Roughly speaking it is a facsimile of the great Tanjore temple, possibly its prototype, or perhaps more probably a copy; but never having been "restored" as the Tanjore example has, and being built throughout in a very hard kind of stone, it retains much of its pristine appearance and purity of design, which has been lost there. It consists of a grand stone stubi or Vimánam, 100 feet square at base and about 165 feet high. Attached to it, on the east side, is the Mele-maṇḍapam, a three-storied portico or transept, covering the cross aisle between the north and south entrances to the temple. To its east again and attached to it, is the west wall and end of the great outer court (Veli-maṇḍapam), which was never completed. The whole is raised on a basement or terrace, at a height of about 5 feet above the (original) ground level. The paper also briefly describes some other places of architectural interest. In one of them, Chenji-koṭṭai, the author found a curious carved stone lying in front of a small shrine dedicated to a local goddess called Kamala-kauni-y-Ammam to whom human sacrifices were formerly offered. It shows four human heads, surrounded by trisuls, ram's and buffalo's horns, arrows and a bow.

This paper, together with a sketch of the carved stone, will be published in the Journal, Part I.

3. *On the Coins of the Mahárájas of Kangra.*—*By* C. J. Rodgers, *Principal of the Normal College, Amritsar.*

(Abstract.)

This paper describes twenty-four coins of Kangra, commencing with Samanta Deva and ending with Triloka Chandra Deva. The former is supposed to have preceded Píthama or Píthama Chandra Deva, who is the first of the Kangra Rájáhs of whom coins have been found. He is assigned by General Cunningham to the year 1330 A. D. The date of Triloka Chandra Deva, according to the same authority (Arch. Report, Vol. V, p. 152), is 1610 A. D. All these coins have a bull on the Obverse, with the name of the king above it; the Reverse shows a horseman.

This paper will be published in the Journal, Part I.

4. *On the Barometer in Asia and Australia, and on the Sun-spot Cycle.*—*By* H. F. Blanford, F. G. S.

(Abstract.)

The three years 1876, 1877 and 1878 were characterized by a very persistent excess of atmospheric pressure throughout India and the Malayan region. It was most intense on an axis lying between the Andamans and Bengal, and was relatively less both to East and West of this line. To the South, Singapore and Batavia showed a similar excess of pressure, less intense but more prolonged; and in Australia, the registers of Adelaide, Melbourne and Sydney show that there also the pressure was excessive; being most so at Adelaide, (where it exceeded that of any Indian Stations), and least so at Sydney. To the North again, in Asia the greatest excess is that shewn by stations in Western Siberia. It appears therefore as far as can be judged from the existing dates, that it was most intense on an axis lying obliquely across the two great continental masses of Asia and Australia.

An examination of the barometric registers of past years shows that at Batavia, Singapore and Port Blair there has been a regular and gradual rise of pressure since 1870, which at Singapore (situated in Lat. 2°) was of remarkable regularity. The register of Batavia which extends back to 1866 shows that at that station it reached a maximum in 1868, sank rapidly to a minimum in 1870 and rose to a maximum again in 1877, the oscillation thus conforming approximately to that of Sun-spot variation. With more or less regularity, the same oscillation is shown by the registers of other stations, and those of Calcutta and Bombay which reach back respectively to the years 1853 and 1847 prove that this variation with the

Sun-spot cycle is a regularly recurrent phenomenon, the minimum pressure coinciding with the maximum of sun-spots and *vice versâ*.

Turning to Siberia, an oscillation of the opposite kind is met with, and of much greater amplitude. It appears to be restricted to Western Siberia and European Russia, and is shewn most prominently by Ekaterinenburg at the Eastern foot of the Ural. It is equally great at St. Petersburg but more marked by non-periodic variations. But it is not distinctly traceable in the registers of Tiflis, nor in those of Nectchingk and Pekin. Those of the last station seem rather to indicate an oscillation of the Indo-Malayan type. In the Indo-Malayan region the variation was very decided as affecting all seasons of the year, being only somewhat more pronounced in the winter (of the Northern hemisphere) than in the summer months. But the opposite variation in Western Siberia was entirely restricted to the winter months.

From this it results that the excessive pressure of 1876-78 was the maximum phase of a cyclical variation in India and the Malay region; and there only. In Northern Asia it was quite anomalous, and most probably also in Australia; and even in the intervening Indo-Malayan region, it is probable that the phenomenon was intensified by an aperiodic or anomalous excess being superimposed on the regular and cyclical excess of pressure.

This paper will be published in Part II of the Journal.

Library.

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR FEBRUARY, 1880.

The Annual Meeting of the Asiatic Society of Bengal was held on the 4th of February, 1880, at 9 P. M.

H. B. MEDLICOTT, ESQ., F. R. S., President, in the Chair.

According to the Bye-Laws of the Society, the President ordered the voting papers to be distributed for the election of Officers and Members of Council for 1880, and appointed Lt.-Col. Sconce and M. von Eetvelde, Scrutineers.

The PRESIDENT called upon the Secretary to read the Annual Report.

ANNUAL REPORT FOR 1879.

In presenting the following report on the condition of the Society during the year 1879, the Council are glad to be able to congratulate the Members again upon the satisfactory state of its affairs. Thirty-three Members were added to the list during the year, of whom 2 were old Members who were re-entered without election, and 31 were new Members. The total number removed from the list was 32, of whom 10 died and 14 retired. The total number of Ordinary Members at the end of the year was 329 as compared with 327 at the end of 1878. Of the Ordinary Members 36 are absent from India, and of the rest 111 are Resident, 154 Non-Resident, 16 Foreign and 12 Life Members.

The annexed tabular Statement shows the fluctuation in the number of Ordinary Members during the past 6 years.

Year.	Paying.				Non-Paying.		Total.
	Total.	Resident.	Non-Resident.	Foreign.	Life.	Absent.	
1874	312	127	184	...	3	32	346
1875	292	113	179	...	3	50	345
1876	294	119	175	...	5	48	347
1877	290	113	163	14	9	46	345
1878	285*	117	153	15	13	29	327
1879	281	111	154	16	12	36	329

During the year Professor Henry and M. Stanislas Julien, two of the Honorary Members of the Society, died. To fill the vacancies thus caused and others existing previously, the following gentlemen have been appointed to be Honorary Members:—Prof. E. B. Cowell, Dr. A. Günther, Dr J. Janssen, Prof. H. Milne-Edwards, Prof. P. Regnaud, and M. E. Renan.

The following names of Ordinary Members appear in the obituary of the year:—

Nawab Amir Ali Khan Bahadur, Mr. R. S. Brough, Mr. G. B. Damant, Mr. R. B. Shaw, Mr. H. C. Sutherland, the Maharaja of Vizianagram, Mr. G. Robb, Mr. F. L. Beaufort, Mr. F. Wilcox and Capt. C. J. F. Forbes, F. R. G. S.,

In Mr. Brough the Society lost a most active Member. He died suddenly of cholera, on the 3rd April, having only the previous evening attended, apparently in good health, a meeting of the Society; and assisted in showing experiments in connection with a paper on a "new standard of light" read by Mr. Schwendler. He promised to become in time an eminent physicist, and was the author of the following papers in the Proceedings of the Society:—

In 1877. "A theoretical deduction of the best resistance of a telegraph receiving instrument."

"Note on Prof. Graham Bell's telephone."

"On a case of lightning; with an evolution of the potential and quantity of the discharge in absolute measure."

"On the diameter of the wire to be employed in winding an electromagnet in order to procure the maximum magnetic effect."

In 1878. "Magnetic elements for northern India."

* A mistake was printed in last year's Report.

"On the proper relative sectional area for copper and iron lightning rods."

Indian Museum.

The following presentations made to the Society have been transferred to the Indian Museum under the provisions of Act XXII of 1876.

(1). Sculptural stones from Buddha Gaya, presented by the Government of Bengal, through Dr. R. Mitra.

(2). Three small figures; one stone, one bronze, and one copper.

(3). A celt found by Capt. Badgley at Shillong, in 1873.

(4). Geological and other specimens collected by Lieutenant R. C. Temple in the march between Kala Abdullah Khán and Lugárí Bárkhán.

Three vacancies in the office of Trustee having occurred through the departure to England of Mr. W. T. Blanford, the President; of Major J. Waterhouse and of Mr. T. S. Isaac,—Dr. Hoernle, Dr. Lewis and Mr. Crawfurd were elected Trustees on the part of the Society.

Finance.

It will be seen from the accounts annexed to this Report that the financial condition of the Society is satisfactory, notwithstanding the loss of income involved in the reduction of the rate of interest on its investments in Government Securities.

A special Committee was appointed during the year to consider and report on the form of account hitherto kept by the Society, and, in accordance with its recommendations, the system of accounts is now under revision. Mr. Westland, to whom the thanks of the Society are due for undertaking this important work, has completed the revision of the Society's accounts, which will accordingly be found published in a form somewhat differing from that adopted in former years. Similarly, the accounts of the O. P. Fund and Conservation of Sanskrit MSS. Fund will shortly be revised and placed on a more satisfactory footing.

London Agency.

At the close of 1878 there was a balance due from the Society to Messrs. Trübner and Co., amounting to £28-10-2. The sale proceeds of the Society's publications, sold by Messrs. Trübner during that year, amounted to Rs. 868-1-7 and of the Bibliotheca Indica to Rs 311-4-0.

Nineteen invoices, consisting of publications of Scientific Societies presented to the Society, and of books purchased, were received from Messrs. Trübner and Co. during the past year. The money value of these consignments was £136-17-8. 404 copies of the Journal, and 316 copies of the Proceedings were despatched to them for sale, besides 628 copies of the Bibliotheca Indica publications.

Library.

The additions to the Library during the year comprise in all 1,433 volumes or parts of volumes. Of these, 741 were received as presentations from Government, from authors, or by exchange, and 692 were purchased.

In last year's report it was stated that the Catalogue of the books in the Library which had been carried out under the late Mr. Blochmann required careful revision. On examination, the work done was found to be defective and it is now being carefully revised under the directions of the President. Twenty-two book-cases have been examined, and the cataloguing of 2,431 books carefully checked. As there are more than 7,570 books, in cases numbered up to 86, it appears that little more than a quarter of the work is accomplished. It is necessarily a tedious process, and cannot be hurried through, while the Assistant Secretary can only give it his spare hours from current work.

Publications.

The publications issued by the Society during the year comprise 10 numbers of the Proceedings consisting of 293 pages of text with 11 plates. Four numbers of the Journal Part I, have been issued containing 405 pages, illustrated with 9 plates. Of the Journal Part II, 4 numbers also have been issued consisting of 234 pages of text with 25 plates. The Title-Page and Index of Part II of 1879, will be issued with No. 1 for 1880, and the fourth part of Part I of 1879 will be published in a few days.

The 1st Part of the extra number to which allusion was made in last year's report, containing Moore and Hewitson's "Descriptions of New Indian Lepidoptera found in the collection of the late Mr. W. S. Atkinson" has now been received, and is ready for distribution to Members.

Building.

The total amount expended in repairs to the Society's premises during the year was Rs. 438-8-0. Besides this, Rs. 110 was spent on removing 4 ancient pillars supporting the staircase, which were claimed by the Trustees of the Indian Museum, and substituting light iron pillars. Half of this charge was recovered from the Trustees of the Museum.

Coin Cabinet.

The additions to the Coin Cabinet have been very large during the year under review. The total number of coins added, is 167. This is, in a great measure, owing to the orders of Government, issued, at the instance of the Council, to the Civil Authorities throughout the country to inform the Asiatic Society of all finds of coins within their respective jurisdictions, in order to give it a chance of purchasing. Accordingly a large number of

purchases have been made; altogether 122. Among these are four gold coins, two Roman (of Domitian and Vespasian) and two South Indian (a Pagoda and a Mada). Again 114 silver coins; *viz.*, 19 of Sher Sháh of Delhi (six are new); 15 of Islám Sháh of Delhi; 1 of Muhammad Sháh of Bengal, 1 of Sultán Jalál-uddin Muhammad Sháh of Bengal; 2 of Bahádur Sháh of Bengal; 1 Surat Sháhi; 1 of Sher Sháh of Lakhnau, 1 Machlidár of Lakhnau; 1 Tara Sháhi; 1 Choli Mohesh; 1 of Burhampur, 1 of Banjrangarh; 12 from Guzarát (Pathoos ?); 12 from Budaon (five with the imperfect legend Sri Mahama.....); 2 of Mahmúd Sháh (from Bijnaur)*; 1 from Sattara; 1 from Surat; 1 from Nassik; 1 Bakhri Rupee; 14 intermediate between the Indo-Scythian and the Adi Varáha series; 12 early Hindu punched coins from Hoshiarpur and the 24-Parganahs; 3 oboli of Alexander; 1 of Ptolemy Philadelphus, 1 of Antiochus Epiphanes, 1 of Antiochus, 1 of Philip III of Macedon, 1 of Antoninus, 1 of Demetrius, and four unnamed. The copper coins purchased are four; *viz.*, 2 of the Bull and Horseman type (from Hoshiarpur); 1 large Alexander, and 1 large Antoninus.

The number of coins presented is 45; *viz.*, 8 gold, 3 silver, and 34 copper. Among these there are two gold (one of Chandragupta II and one of the series intermediate between the Guptas and the Indo-Scythians) and two copper (of Azes and of Su-Hermaeus) from F. S. Growse, Esq., C. S.; 6 gold (out of the Ahin Posh Tope find, 3 of Kadphises, and 3 of Kanerki) from the Indian Government; 3 silver (of Bahádur Sháh, Sher Sháh and Islám Sháh) from Babu Surjyanarain Singh; 29 copper (of the Maharájahs and Sultáns of Kashmir) from Charles J. Rogers, Esq., Principal of the Normal College in Amritsar; and 3 copper (modern Nepali pice) from Syed Ahmed Khán.

A Catalogue of all the coins in the Society's Cabinet is in course of preparation.

Secretary's Office.

Dr. A. F. R. Hoernle has continued to hold the Philological Secretaryship and charge of Part I of the Journal.

Major J. Waterhouse performed the duties of General Secretary till December, when Mr. J. Crawfurd was appointed in his place. Major Waterhouse also edited Part II of the Journal until Mr. Wood-Mason resumed the Natural History Secretaryship in October.

* Legend; *obv.*, the great king, conqueror of the world and faith, Abul Muzaffar Mahmúd, son of the king. *Rev.*, during the reign of Mu'tasim, Lord of the Faithful. *Round the circle on both sides,* struck this silver coin in the city of Delhi in the year 653 Hijra.

The Treasurership has been held throughout the year by Mr. Beverley, with the exception of about 3 months from May to July, when Mr. Medlicott acted for him.

Mr. W. E. Bateman resigned the Assistant Secretaryship in February, and Mr. W. A. Bion was appointed in his place.

Mr. Andrews, and Babus Kedarnath Bysack and Ramjibun Mookerjea have continued to hold the post of Assistant Librarian, Cashier and Assistant Cashier respectively. Babu Jadubinda Bysack left the service of the Society in September, and was succeeded, as storekeeper, by Babu Jogendranath Mittra.

Bibliotheca Indica.

In the two series together, twenty-four fasciculi were issued during the year; four in the Persian, and twenty in the Sanskrit. They belong to eleven different works, of which three, in the Sanskrit series, have been completed. The latter are the Agni Purána, the Chaturvarga Chintámani and the Kátantra. Of the works published one, in the Persian series, is an English translation of the Tabaqát-i-Náṣirí; the rest are text editions, nine in Sanskrit and one in Persian.

A. *Persian Series.*

Major H. G. Raverty has brought out two fasciculi of his annotated English translation of the TABAQÁT-I-NÁṢIRÍ. The addition of two more fasciculi, it is expected, will complete the work.

Maulvi Abdur Rahim of the Calcutta Madrasah has issued one double-fasciculus, consisting of two numbers, of the Persian text of Abul Fazl's AKBAR NAMAH. These complete the second volume of the work, of which one volume more remains to be published, in order to complete it. It contains the history of Akbar's reign to 980 Hejira (A. D. 1572). An index to Vol. II of all proper names mentioned in it, similar to that of Vol. I, will also be published.

B. *Sanskrit Series.*

Dr. Rájendralála Mitra has brought out the last fasciculus of the AGNI PURÁṆA. The text edition of that work was completed last year in three volumes. Dr. Mitra has now added an English introduction, which very fully describes the contents of that important work. It is a sort of Cyclopædia of Sanskrit Literature, and is beside the Vishnu Puráṇa and the Vayu Puráṇa, the most ancient and most authentic of that class of Sanskrit works. The text of the first has been edited twice, though not by this Society. An edition of the text of the second is now in course of publication by the same learned editor, to whom the Society is indebted for the edition of the Agni Puráṇa.

Of the VAYU PURÁNA, the editor of which, as above mentioned, is Dr. Rájendralála Mitra, three fasciculi have been issued. An English translation of this work will appear under the auspices of the Oxford University authorities.

The text of the TAITTIRÍYA SAMHITÁ, which is edited by Paṇḍit Maheśachandra Nyayaratna, the Principal of the Sanskrit College, has been advanced by two fasciculi. The work contains the earliest recension of the mantras of the Black Yajur Veda together with the commentary of Mádhava Áchárya.

The same learned editor has also issued one more fasciculus of the MÍMÁNSA DARŚANA, a critical commentary on the Ritual of the Veda accompanied by the commentary of Śavara Svámin.

Of the GOBHILÍYA GṚIHYA SUTRA three fasciculi have appeared. The edition is illustrated by a commentary compiled by the editor himself, Paṇḍit Chandra Kánta Tarkálankára. The work is expected to be completed in the course of the current year; only one more fasciculus is wanting.

Paṇḍit Bála Sástrí, of the Benares College has brought out the seventh fasciculus of the BHÁMATI, which is a Gloss on Sankara Áchárya's commentary on the Brahma Sútras by Váchaspati Miśra. Owing to ill-health the learned editor was not able to complete the work during the past year, as he had hoped to do; but there is every prospect of its being concluded in the present year.

Six fasciculi have been issued of HEMÁDRI'S CHATURVARGA CHINTÁMANI. This concludes the second volume. Three MSS. of one of the three remaining volumes, the Sraddha Khaṇḍa, have been collected. The rest cannot be published, for want of MSS. from which to edit them.

The scholarly edition of the KÁTANTRA, for which the Society is indebted to Professor J. Eggeling of Edinburgh, has also been completed during the year, by the issue of the fifth and the sixth fasciculi. The last fasciculus is enriched by excellent critical notes and an index of Sútras, contributed by the editor. This is one of the most important grammatical works of India, inasmuch as it is the most complete existing representative of the Sanskrit Grammar before Páṇini. The text contains both the sútras and the commentary on them by Durga Siñha.

Dr. A. F. Rudolf Hoernle's edition of the PRITHIRÁJA RASAU, the famous epic of Chand Bardáí in old Hindi, has advanced by one fasciculus, the third of Part II. The work is a large one and the difficulties, owing to the ancient character of its language, considerable; moreover one of the co-editors, Mr. J. Beames, who has published one fasciculus of Part I, has retired from the work. It will be some time, therefore, before it can be brought to a conclusion.

The following is a detailed list of the publications issued during 1879.

Persian Series.

1. TABAQÁT-I-NÁṢIRÍ, by Abú 'Amr-i-'Usmán, translated by Major H. G. Raverty. Nos. 358 and 359. Fasc. IX and X.

2. AKBÁR-NÁMAH, by Abul-Fazl-i-Mubárak-i-Allámí, edited by Maulawí 'Abd-ur-Raḥím, Calcutta Madrasah. Nos. 431, 432. Vol. II, Fasc. IV.

Sanskrit Series.

3. AGNI PURÁṆA, a system of Hindu Mythology and Tradition, edited by Dr. Rájendralála Mitra, C. I. E. No. 421. Fasc. XIV, (Introduction).

4. VAYU-PURÁṆA, a system of Hindu Mythology and Tradition, edited by Dr. Rájendralála Mitra, C. I. E. Nos. 420, 424, 428. Fasc. I—III.

5. TAITTIRÍYA SAṂHITÁ, of the Black Yajur Veda, with the commentary of Mádhava Áchárya, edited by Paṇḍit Maheṣa Chandra Nyayaratna. Nos. 239, 241. Fasc. XXX and XXXI.

6. MÍMÁNSA DARṢANA, with the commentary of Sávara Svámin, edited by Paṇḍit Maheṣa Chandra Nyayaratna. No. 388. Fasc. XIV.

7. GOBHILÍYA GṚIHYA SÚTRA, with a commentary by the editor, edited by Chandra Kánta Tarkálankára. Nos. 415, 416, 423. Fasc. VIII, IX, X.

8. BHÁMATÍ, a Gloss on Sankara Áchárya's commentary on the Brahma Sútras by Váchaspati Miṣra, edited by Paṇḍit Bála Sástri. No. 427. Fasc. VII.

9. CHATURVARGA CHINTÁMANI, by Hemádri, edited by Paṇḍits Yogeṣvara Bhaṭṭáchárya and Kámákhyánátha Tarkaratna. Nos. 417, 418, 419, 422, 426, 429. Vol. II, Part, II, Fasc. VII—XII.

10. KÁTANTRA, with the commentary of Durga Siñha, edited with notes and indexes, by Dr. Julius Eggeling. Nos. 396, 397. Fasc. V and VI.

11. PRITHIRÁJA RASAU, of Chand Bardáí in the original old Hindí by Dr. A. F. Rudolf Hoernle. No. 430. Part II. Fasc. III.

Among the works which it is contemplated by the Society to publish in the place of those which have been completed or are approaching completion, there are the following:

Arabic-Persian Series.

1. English Translation of the Tariḳh-ul-Ḳhulfa by Jaláluddínus Suyúti with a short memoir of the author, by Major H. S. Jarrett, B. S. C.

2. English Translation, with notes, of Vol. II. of the Ain-i-Akbari, uniform with the late Mr. Blochmann's annotated translation of Vol. I, by Captain H. W. Clarke, R. E.

Sanskrit Series.

1. MÁITRÁYANÍ SAMHITÁ, one of the best known texts of the Yajur Veda, edited by Dr. L. Schroeder.

2. English Translation with notes, of the KATHÁ SARIT SÁGARA, the well-known treasury of Indian Folklore, by C. H. Tawney Esq., M. A., Principal of the Presidency College.

3. English Translation with notes, of the CHARAKA, the oldest Hindu work on Medicine, by Dr. Mahendralála Sarcár.

List of Societies and Institutions with which Exchanges of Publications have been made during 1879.

Amsterdam :—Royal Zoological Society.
Batavia :—Batavian Society of Arts and Sciences.
Berlin :—Royal Academy.
Berne :—Swiss Entomological Society.
Bombay :—Bombay Branch, Royal Asiatic Society.
——— :—Editor, Indian Antiquary.
Boston :—Natural History Society.
Bordeaux :—Bordeaux Academy.
Buenos Ayres :—Public Museum.
Brussels :—Royal Academy of Sciences.
——— :—Geological Society of Belgium.
Calcutta :—Agricultural and Horticultural Society of India.
——— :—Geological Survey of India.
Cherbourg :—National Society of Natural Science.
Christiana :—University Library.
Copenhagen :—Royal Society of Northern Antiquaries.
Cambridge :—University Library.
Colombo :—Royal Asiatic Society, Ceylon Branch.
California :—Californian Academy of Arts and Sciences.
Dehra-Dun :—Great Trigonometrical Survey.
Dublin :—Royal Irish Academy.
Edinburgh :—Royal Society.
Geneva :—Physical and Natural History Society.
Genoa :—Museum of Natural History.
Königsberg :—Physical and Economical Institution.
Leipzig :—German Oriental Society.
Leyden :—Royal Herbarium.
Liége :—Royal Society of Sciences.

London :—Royal Society.
——— :—British Museum.
——— :—Royal Asiatic Society of Great Britain and Ireland.
——— :—Royal Institution.
——— :—Institution of Civil Engineers.
——— :—Institution of Mechanical Engineers.
——— :—Royal Geographical Society.
——— :—Zoological Society.
——— :—Statistical Society.
——— :—Geological Society.
——— :—Linnean Society.
——— :—Anthropological Institute.
——— :—Royal Astronomical Society.
——— :—Royal Microscopical Society.
——— :—Editor, Athenæum.
——— :—Editor, Academy.
——— :—Editor, Nature.
——— :—Society of Telegraph Engineers.
Lyon :—Agricultural Society.
—— :—Natural History Society.
—— :—Museum of Natural History.
Madras :—Literary Society.
Manchester :—Literary and Philosophical Society.
Moscow :—Société des Naturalistes.
Munich :—Royal Academy.
Netherlands :—Royal Society.
New Haven, U. S. :—Connecticut Academy of Arts and Sciences.
New South Wales :—Royal Society.
Oxford :—Bodleian Library.
Paris :—Imperial Library.
—— :—Anthropological Society.
—— :—Asiatic Society.
—— :—Geographical Society.
—— :—Zoological Society.
Philadelphia :—Academy of Natural Science.
Pisa :—Tuscan Society of Natural Sciences.
Stettin :—Entomological Society.
Stuttgardt :—Natural History Society of Wurtemberg.
St. Petersburgh :—Imperial Library.
———————— :—Imperial Russian Geographical Society.
———————— :—Imperial Academy of Sciences.
———————— :—Imperial Botanical Gardens.

Stockholm :—Royal Academy of Sciences.
Trieste :—Adriatic Society of Natural Science.
Turin :—Academy.
United States, America :—Geological Survey of the Territories.
Vienna :—Imperial Geological Institute.
——— :—Anthropological Society.
——— :—Imperial Academy of Sciences.
——— :—Zoological Society.
Washington :—Smithsonian Institution.
——— :—Commissioners of the Department of Agriculture.
Yokohama :—German Oriental Society.
——— :—Asiatic Society of Japan.

Abstract of Proceedings of Council during 1879.

January 2nd. Ordinary Meeting.

A recommendation of the Finance Committee, with reference to a letter from Messrs. Trübner and Co., dated 13th August, that Messrs. Trübner should be allowed to sell the Journal and Proceedings at 4*s.* and 1*s.* respectively, while accounting to the Society at the rate of 3*s.* and 9*d.*, was agreed to.

January 30th. Ordinary Meeting.

The sale of the out-house situated at the north-west corner of the Society's premises for Rs. 100 was approved of.

February 4th. Special Meeting.

The Annual Report and Accounts were submitted.

February 27th. Ordinary Meeting.

The Members of the Finance and other Committees were elected.

March 27th. Ordinary Meeting.

The Proceedings were ordered to be sent monthly by Parcel Express, and the Journals quarterly, to Messrs. Trübner and Co.

Dr. A. F. R. Hoernle's offer to make a Catalogue raisonné of the coins in the Society's Cabinet was accepted.

It was resolved that the Government should be asked to give the Society some of the duplicates among the coins found in the Ahin Posh Tope.

Mr. J. Westland was appointed a Member of the Finance Committee.

Copies of Mr. H. Rivett-Carnac's letters on the subject of the preservation of Antiquarian Remains were ordered to be submitted to Government, with a suggestion from the Council, that District Officers and Engi-

neers of State Railways should be requested to preserve all Archæological Remains they might come across.

A letter from the Secretary to the Government of India, Department of Revenue, Agriculture and Commerce, No. 69 (Marine Surveys), dated 18th March, forwarding copy of a letter from Commander A. D. Taylor on the subject of the Sea Dredging Operations, and requesting that the Government may be favoured with any remarks which the Society may desire to offer thereon, was referred to the Dredging Committee.

May 1st. Ordinary Meeting.

A letter was read from the Under-Secretary to the Government of Bengal, No. $\frac{6}{68}$ Misc., dated 27th March, forwarding a copy of a letter from the Officiating Secretary to the Government of India, Home Department, No. 654, dated 18th March, conveying the thanks of the Governor-General in Council to Dr. Rájendralála Mitra for his suggestions on the subject of the discovery and preservation of the records of ancient Sanskrit literature. The letter was ordered to be recorded.

A letter was read from the Under-Secretary to the Government of Bengal, No. $\frac{6}{70}$ Misc., dated 27th March, forwarding copy of a resolution dated 18th March, re-distributing the sum of Rs. 24,000 sanctioned for the preservation of Sanskrit MSS., and requesting that a report of the progress made in all branches of the work may be submitted as early as possible after the close of the official year 1879-80. The letter was ordered to be recorded, and a copy to be sent to Dr. Mitra with a request that he would be kind enough to prepare the required report.

A request that the Society's publications should be sent to the Chandernagore Pustakagar was declined.

The Minutes of the Council upon a letter from the Under-Secretary to the Government of Bengal No. $\frac{6}{71}$ Misc., dated 27th March, appointing the President and Natural-History Secretary *ex-officio* Members of the Zoological Gardens Committee, was ordered to be recorded.

Professors Cowell, Regnaud and H. Milne-Edwards and Drs. Rájendralála Mitra, Janssen and Günther were nominated Honorary Members.

The Secretary reported that Mr. H. B. Medlicott had agreed to undertake the duties of Treasurer to the Society, during Mr. Beverley's absence on leave.

May 29th. Ordinary Meeting.

A letter from the Officiating Under-Secretary to the Government of India, Department of Revenue, Agriculture and Commerce, No. 113, dated 22nd May, stating that, owing to the present financial pressure, the Government find it impossible to engage the services of Messrs. Murray and Piercy to aid the Sea Dredging Operations, was ordered to be recorded.

The exchange of the Society's publications, containing botanical papers, for the "Acta Horti Petropolitani" was sanctioned.

A Committee, composed of Messrs. Beverley, Westland and Douglas, was appointed to consider the question of a change being made in the keeping of the Society's accounts.

The question of Captain H. W. Clarke's translation of the 2nd volume of the Ain-i-Akbari was ordered to be deferred, as definite information had been received that Mr. Blochmann had completed the translation of the 2nd volume before his death.

The notice of the proposed change of Rule 14*e* was ordered to be circulated to Resident Members.

An application from the Geographical Society of Metz for an exchange of publications was declined.

The sum of Rs. 300 was ordered to be remitted to Mr. Grote for the purchase of coins from the Freeling Collection.

Mr. J. Douglas was appointed a Member of the Finance, and Major Jarrett of the Philological, Committee.

June 26th. Ordinary Meeting.

A reward of Rs. 100 was ordered to be offered to any one giving information that would lead to the discovery of the MSS. of the late Mr. Blochmann's translation of the 2nd volume of the Ain-i-Akbari.

July 31st. Ordinary Meeting.

A letter from Major H. S. Jarrett, dated 9th July, requesting the Society to undertake the printing of his translation of the Tarikh-ul-Khulfa, was referred to the Philological Committee.

An application from the Adelaide Philosophical Society for an exchange of publications was declined.

August 28th. Ordinary Meeting.

A letter from the Under-Secretary to the Government of Bengal, No. $\frac{1880}{140}$ Misc., dated 13th August, stating that the Lieutenant-Governor approved of the manner in which the Government grant to the Society for the Conservation of Sanskrit MSS. had been spent, was ordered to be recorded.

The receipt of 12 gold coins from the Ahin Posh Tope, presented by the Government of India, Home, Revenue and Agricultural Department, was ordered to be acknowledged with thanks.

It was resolved that Major-General J. T. Walker should be asked to accept the office of President, and that Mr. Wood-Mason be appointed Member of Council, in place of Mr. W. T. Blanford.

The Secretary reported that Mr. Grote had lodged the money, sent for the purchase of a selection from the Freeling Collection of coins, with Messrs. H. S. King and Co., as it was uncertain whether the collection would be sold, unless it could be done so *en bloc*.

October 2nd. Ordinary Meeting.

An application from the Royal Microscopical Society for an exchange of publications was agreed to.

It was ordered that, as Mr. Blochmann's MSS. could not be found, Captain H. W. Clarke should be informed that he could proceed with the work of translating the 2nd volume of the Ain-i-Akbari.

Mr. Westland was appointed Member of Council, and Dr. Hoernle Trustee of the Indian Museum, in place of Mr. T. S. Isaac.

The Minutes of the Council were read on a letter from Major-General J. T. Walker declining the Presidentship of the Society.

It was resolved that Mr. C. H. Tawney should be asked to accept the office.

The thanks of the Society were ordered to be conveyed to Messrs. Grote and Moore for the trouble they had taken in the publication of the 1st Part of the "Descriptions of New Indian Lepidoptera."

October 16th. Ordinary Meeting.

A letter was read from the Under-Secretary to the Government of Bengal, No. 972, dated 9th October, forwarding copy of a letter to Mr. G. A. Grierson stating that the Lieutenant-Governor had been pleased to sanction a grant of Rs. 400 to the Society, as a subscription for the number of copies of his Maithili Grammar covered by this sum. The letter was ordered to be recorded.

M. E. Renan's name was ordered to be inserted in the list of the Honorary Members.

An advance to Dr. Mitra of Rs. 600 from the Conservation of Sanskrit MSS. Fund to be expended in the search for Sanskrit MSS. was sanctioned.

Mr. Wood-Mason was re-appointed Natural-History Secretary.

A pension of Rs. 4 per mensem was granted to Manu, the office Jamadar, who had been in the service of the Society for 25 years.

November 27th. Ordinary Meeting.

A letter from the Under-Secretary to the Government of India, Home, Revenue and Agricultural Department, No. 1922, dated 16th October, sanctioning an additional sum of Rs. 1,500 for the cataloguing of the Sanskrit MSS. in the Mahárájá of Bikanir's Library, was ordered to be recorded.

The exchange of the Society's publications for Professor Carl's "Repertorium für experimental Physik" was sanctioned.

The thanks of the Council were ordered to be conveyed to Mr. Westland for his Memorandum on the proposed change in the Society's accounts, and his scheme was ordered to be adopted from the 1st of January 1880.

On Mr. Tawney's declining to accept the Presidentship of the Society, Mr. H. B. Medlicott was appointed President. Messrs. Tawney and Westland were appointed Vice-Presidents, and Mr. J. Crawfurd Member of Council and General Secretary.

A Memorandum was submitted by Mr. H. B. Medlicott, showing the progress made in the revision of the new Catalogue.

The whole of the printing of the Bibliotheca Indica Series was ordered to be made over to the Baptist Mission Press.

The price of coloured copies of Moore and Hewitson's "Descriptions of New Indian Lepidoptera," Part I, was fixed at Rs. 6, or Rs. 4-8 for Members.

December 24th. Ordinary Meeting.

The exchange of the "Academy" for the Society's publications was sanctioned.

An application from the Royal Zoological Society of Amsterdam for an exchange of publications was agreed to.

It was resolved that half the cost of substituting iron pillars for the 4 stone ones formerly supporting the staircase in the Society's Rooms, and which had been made over to the Indian Museum, should be recovered from the Trustees.

Mr. J. Crawfurd was appointed a Trustee of the Indian Museum, and Mr. J. F. Browne a Member of the Philological Committee.

A recommendation of the Finance Committee, that an increase of Rs. 10 per mensem should be made to the pay of the Assistant Librarian, was approved.

The PRESIDENT then delivered the following address—

PRESIDENT'S ADDRESS.

GENTLEMEN,

I have already, on the very recent occasion of my nomination, expressed regret that a more suitable President had not consented to stand. I have now only to thank you for the honour you have conferred upon me, and to engage to do my best in performing the duties entrusted to me.

It would be contrary to usage to expect an address from a newly-made President; indeed, as my election is confirmed only this evening, there would be a sort of impropriety in my appearing before you with a ready-made retrospect of work; and my total unreadiness at impromptu speaking,

or indeed any kind of speaking, should have made me again persist in declining a position in which such readiness is more or less essential. The few remarks I have now to make relate only to business.

The suggestion may be traceable to my personal failing, as just now indicated, but in thinking over the Society's welfare and prospects, as your President is bound to do, it has appeared to me with some force of reason that a presidential address is a serious stumbling-block in our case, and, as such, an indicator of a difficulty that threatens the Society. It is the only compulsory work contingent upon membership—excepting, of course, the onerous duties undertaken by our Honorary Secretaries—and it falls upon an office that should under our circumstances be free from any such burden. In the good old times when we were all amateurs, when Sir Edward Ryan and Sir James Colville presided over us, each for ten or more successive years, no such task seems to have been thought of. The innovation is traceable to the advent of the inevitable working man, the professional student. As a member of the brotherhood I may speak of him without offence. He soon introduced the customs of his kind, and set up the didactic business, with the annual display of fireworks over the achievements of the year. I am not prepared to say that the practice is an evil: an occasional taking stock of progress, local or general, (as was done for us last year by Mr. Blanford) is most useful and instructive, and there are sometimes gifted men who can turn every such opportunity to account, but as a regular institution an annual presidential address is everywhere more or less of an incubus, and under certain circumstances may be seriously damaging, as I think it would be with us.

In normal communities scientific societies are mostly restricted to special branches of study, and are sufficiently supported by men more or less devoted to that study, and who think it an honour, and an advantage to belong to the society. For larger societies that deal with all subjects there are also enough and to spare of scientific workers seeking the advantages or the honour of fellowship. If there were any need to illustrate how abnormal is the community to which we belong in India, the statistics of our Society would be much to the point. The relation of the body to the members seems to be almost the reverse of what I have indicated as normal. The very precarious hold the Society has upon its members has always been a complaint, but instead of mending with the advance of civilization, there are signs of its becoming a serious disease. This has been distressingly exhibited of late in connexion with a praiseworthy endeavour made by our administration to get the affairs of the Society into more regular working order. In some instances when notice was sent to members, calling attention to the rules of the Society and stating how long the subscription had been in arrears, while they had been in regular receipt of

the Journal, instead of apologising for their neglect, as a proper sense of the situation would dictate, they have not been ashamed to take offence at the notice, and to request the removal of their name from the list of members. The fact, I say, is a caution against attempting to regulate our practice too closely on the pattern of Societies in a normal community. Except for the unavoidable introduction of a few scientific professional men, the community in India is very much what it was 50 years ago, although habits may have changed; and our Society is now as then very largely composed of members of the several services whose interest in science of any kind is more or less nominal, and who join the Society principally under a vague sense of duty, that, as representatives of a higher civilization, they should contribute to sustain in this country the only free exponent of the basis of that civilization. Several causes have tended to slacken that sense of duty. The greatly increased facilities of intercourse with the mother country, whereby we can have quick enjoyment of many of the privileges of her higher life, tends to obliterate the hitherto sentiment that India is at least our foster mother, that we are here as representative men, with claims upon us that would not apply in the home country. There are around us men who are in a way good representatives of modern intelligence, who, in former times, would certainly have taken an interest if not an active part in this Society, but who now affect to ignore it. On this plea we have a very strong appeal to make: no amount of borrowed light can compensate India for the extinguishing of ever so small a source of independent light within herself. In the good old times when we were all amateurs, several scientific or literary societies in different parts of India managed to exist for various periods; they have long since become extinct; and from the beginning till now our Society has been the only one that has sustained a regular life. Even as compared with many societies in Europe, the career of the Asiatic Society of Bengal has been a distinguished one. It will be a disgrace to Englishmen in India if its sustenance should fall short.

From the statistics of our Society there is a more unfortunate experience to be learned than the danger I have pointed out. That danger might be of no account if indigenous resources had been awakened and developed, but of this there is still but small evidence. However Englishmen may conduct themselves in India, they can never of themselves form the normal community which it is the function of civilization to establish. Superficially it did not seem an unreasonable hope that the seeds of knowledge would take root in this country, and in time yield an abundant crop of native scientific workers, amongst whom this Society would find its natural support. It is not to be doubted that this hope is yet to be realised, but it seems as if the time required for the evolution were to be

reckoned by geological rather than by ordinary life periods. I find indeed the names of some 50 native gentlemen in our list of members, but a very small minority of them are working partners, and these are still exclusively attracted to the less exact branches of research, such as philology and archæology, the cultivation of which studies had been long carried on under indigenous methods. It seems as if a *nidus* for the seed of natural science had not as yet been formed, or else even such teaching as has been given must have borne fruit.

I have twice referred to the age of amateurs; and, from the lips of a 'professional,' it might be thought that the term was meant slightingly. I used it as peculiarly designating the bond of fellowship that should unite a Society like ours. The receipt of pay is certainly not exalting: the only conditions to save it from being debasing are, that the work should be congenial, and that no pains should be spared to make it good; and these are the characters that distinguish the amateur. His is a spirit that should make every honest work invigorating. No doubt the title is variously applied; some usurp the name who work only for show; but these should take rank with other quack professors, as the true professional man may lay claim to the position of amateur. It is in this capacity that he is admitted to our Society.

To come back to our starting point: I have made a principal appeal to the moral consciousness of Englishmen in India, but it behoves us to do what we can to conciliate so capricious an auxiliary. If it should come to be thought that the Society is in the hands of, and sufficiently provided for by, devotees in the shape of experts and 'professionals,' we should risk losing the very slight hold we have upon a large number of our members. I do not speak without a knowledge of the subject, and I believe that some such notion has already begun to take effect; and the object of my remarks is to suggest the only remedy I can think of—that we should not disguise our position as amateurs, that we should, if possible, as of old, select our President from those whom the men we have to look to are accustomed to follow. From this point of view the innovation of an annual address is certainly a scare and an impediment: which is the thesis I started with. I am not prepared to say whether it is possible to interfere with what may be an inevitable process of elimination: but that would not affect the accuracy of the diagnosis of our position I have submitted for your consideration.

Although I have uttered a sort of Cassandra warning, it is, I am happy to say, apparent from the report you have heard read that our venerable Society is not yet on the verge of dissolution. The papers presented at our meetings during the past year are of high interest: in terrestrial physics we have heard the results of the very important series of

pendulum observations in India, communicated by General Walker; and Mr. H. F. Blanford has made several interesting contributions from his studies in meteorology. In applied physics, valuable researches have been exhibited by Mr. Schwendler and by Colonel Tennant, R.E. In natural history, philology, archæology and geography many instructive papers were read and published. As a personal favour, I would ask permission to mention here why there should be a conspicuous absence of geological work in our publications, while the members of the Geological Survey have certainly not been idle members of the Society: it is because the Survey possesses in its Records a quarterly publication of its own, easily obtainable by every one, and in which all work of interest receives prompt notice.

It is in connexion with the Library that members are most wont to complain. While admitting that these complaints are founded on fact, I would emphatically point out that guilty members are chiefly to blame for the grievance. In a Society so old as ours and originally so well set up, the collection of books should now be very valuable; and so it is; but irreparable losses have been inflicted by the unconscionable conduct of members, in taking out books and never returning them. The evil is far from extinct; men seem to think that their book-shelves are to be permanently stocked with works of reference from the Society's Library, and that, as members, they can do just as they please. It seems of little use to make rules, for reference to them is in some cases constantly disregarded. I would earnestly appeal to the sense of our members to be more reasonable in this respect. Another cause of inefficiency is that from which every institution in India is more or less a sufferer—the very frequent change and removal of comptrolling officers who may take a personal interest in the establishment; and thirdly, there is the great difficulty in India of procuring a permanent salaried officer who is competent for the higher duties of a Librarian. An effort is now being made to get the Library into better order. In every moment that can be spared from routine work, our new Assistant Secretary is engaged in cataloguing and arranging the books upon an approved system.

In the matter of accounts I have to make special mention of the great obligation the Society is under to Mr. J. Westland. Our accounts have no doubt always been effectively comptrolled and audited, but in a very complicated and troublesome manner. Mr. Westland has, with much personal labour, completely re-organised our financial records upon a proper technical system.

I would finally ask you to join me in thanking our Honorary Secretaries for their unwearied attention to the affairs of the Society.

The PRESIDENT announced that the Scrutineers reported the result of the Election of Officers and Council as follows :

H. B. Medlicott, Esq., M. A., F. R. S., F. G. S.,	*President.*
Dr. Rájendralála Mitra, C. I. E.	*Vice-Presidents.*
J. Westland, Esq., C. S.	
C. H. Tawney, Esq., M. A.	
J. Wood-Mason, Esq.	*Secretaries and Treasurer.*
Dr. A. F. R. Hoernle.	
J. Crawfurd, Esq., C. S.	
H. Beverley, Esq., C. S.	
H. B. Medlicott, Esq., F. R. S.	*Members of Council.*
Dr. Rájendralála Mitra, C. I. E.	
J. Westland, Esq., C. S.	
C. H. Tawney, Esq., M. A.,	
Major-General J. T. Walker, F. R. S.	
D. Waldie, Esq., F. C. S.	
A. W. Croft, Esq., M. A.	
H. F. Blanford, Esq., F. G. S.	
Babu P. C. Ghosha, M. A.	
Dr. T. R. Lewis.	
L. Schwendler, Esq.	
J. Wood-Mason, Esq.	
Dr. A. F. R. Hoernle.	
H. Beverley, Esq., C. S.	
J. Crawfurd, Esq., C. S.	

Messrs. J. Douglas and J. Westland were appointed to audit the annual accounts.

The Meeting was then resolved into the Ordinary Monthly General Meeting.

H. B. MEDLICOTT, Esq., F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From Mrs. G. H. Damant,—Gaur : its Ruins and Inscriptions. By J. H. Ravenshaw.

2. From Dr. D. B. Smith,—2 Astronomical Charts.

3. From the Meteorological Reporter to the Government of India,—Register of Original Observations in 1879, reduced and corrected. January 1879.

4. From the Chief Secretary to the Madras Government,—two silver coins.

The following gentlemen, duly proposed and seconded at the last meeting, were ballotted for and elected Ordinary Members—

The Hon'ble Arthur Wilson. Beháriláł Gupta, Esq., C. S.

The following are candidates for ballot at the next meeting—

1. Lieut. R. C. Tufnell, 30th Madras Infantry, proposed by M. Longworth Dames, Esq., C. S., seconded by Dr. A. F. R. Hoernle.

2. Rameśvar Maliah, Esq., proposed by Dr. R. Mitra, seconded by J. Crawfurd, Esq.

3. A. C. Carlleyle, Esq., proposed by Dr. A. F. R. Hoernle, seconded by J. Crawfurd, Esq.

The SECRETARY reported that Dr. R. A. Barker had compounded for his future subscriptions.

The COUNCIL reported that Mr. Wood-Mason had been elected Member of Council on the 28th August, and had been been re-appointed Natural-History Secretary on the 16th October.

The SECRETARY read the following letter from Col. J. F. Tennant, F. R. S., drawing the attention of the Society to the 1st Part of Vol. I of Professor Newcomb's "Astronomical Papers for the use of the American Nautical Almanac:"—

"I should like to draw the attention of members of the Asiatic Society who may be interested in Ancient Chronology depending on Solar Eclipses, to the First Part of Vol. I of 'Astronomical Papers for the use of the American Nautical Almanac.' It is published in 1879 at Washington.

"The author, Professor Newcomb, Superintendent of the Almanac, has recently been engaged in comparing Hanssen's Lunar Tables with the records of old eclipses, and he has arrived at certain results as to the corrections required to satisfy observation. In the work I mention (a quarto of 56 pages), he has given an investigation of the laws of the recurrence of eclipses, and obtained some relations not generally known or appreciated. Aided by these, and taking Hanssen's Tables as a basis, he has given tables which enable one to ascertain, in a very short time, what eclipses occur in any year between B. C. 700 and A. D. 2300, and to recognize their nature. Further tables enable one to compute, with great ease, the fundamental numbers required for computing the phenomena of the eclipse by Bessel's method.

"All the results are approximate, but, when dealing with ancient records, these approximations are sufficient, and, even in modern times, the tables will give accuracy enough to enable one to know the character of an eclipse and the rough limits of its several phases."

The following papers were read:—

1. *A History of the Fossil Vertebrata of India.—By* R. Lydekker, B. A.

The author requested that this paper might be taken as read, as it was too long to be read *in extenso* at the meeting. He remarked that the history of the fossil vertebrates of India was intimately connected with the Asiatic Society of Bengal, and it was, therefore, appropriate that a sketch of the state of our knowledge of the subject should be presented to the public through the Society.

This paper will be published in the Journal of the Society, Part II, No. 1 for 1880.

2. *On the Zoological Position of the Barhal, or Blue-Sheep of Thibet.—By* R. Lydekker, B. A.

(Abstract.)

The author showed that the characters of the skull and horns in this animal indicated closer relationship with the goats than with the sheep, while the external characters were closer to those of the sheep, and concluded that Hodgson's genus *Pseudois* should be retained for the 'barhal.'

This paper will be published in the Journal, Part II.

Mr. Wood-Mason made a few remarks on this paper.

3. *An Account of the Verification in part of a set of Standard Weights, and the Relative Values of the Series of Weights in use.—By* Col. J. F. Tennant, R. E., F. R. S., *Master of the Mint.*

(Abstract.)

This paper describes the method by which a portion of the weights of an English Bullion set have been compared, and their values found in terms of a Standard Ounce, known in terms of the English Standard Pound. Colonel Tennant has given full details, showing how the comparison and evaluation can be systematically carried out in some cases, and how an exceptional case can be dealt with. He has everywhere kept a record of the probable errors generated in his procedure, and has endeavoured to make his paper such that it may serve as a guide to any one who may have to verify weights. Tables are given in the appendix which are necessary to reduce the results of weighings in air to what they would have been in a vacuum, and in determining specific gravities.

Lastly, Colonel Tennant compares the advantages of several systems of weights, and discusses the best value of a Standard weight and describes the results he has arrived at, and by which he has been guided, in making arrangements for a set of Standard Tolah weights for the Mint.

This paper will be published in the Journal, Part II

4. *Rude Megalithic Monuments in North Arcot.—By* Lieut.-Col. B. R. Branfill. *Communicated by* Major-General J. T. Walker, R. E., C. B., F. R. S.

(Abstract.)

The tombs described in this paper are of unusual interest on account of the size, shape and arrangement of the slabs of which they are composed, and the rarity of their chief characteristic.

They are 30 feet in diameter, and consist of 3 concentric rings of upright stone slabs, half of them being semicircular at top. The three rings are of various heights, the outermost being 3 feet, the innermost 12 or 15 feet high, above the cairn. The whole forms an imposing structure and recalls the idea of a small citadel or fortification. On excavating, the usual sepulchral relics were found in them, except that iron weapons were very scarce. The chief novelty to the author were two or three Tamil letters, found scratched on a fragment of a little bowl.

This paper will be published in the Journal, Part I.

5. *Supplementary Note to the Paper on the Coins of the Sunga or Mitra Dynasty.*—By* A. C. Carlleyle, Esq., *of the Archæological Survey.*

(Abstract.)

This paper describes another, apparently *unique*, coin of a king of the Sunga dynasty, called Ayu-mitra. He must have been one of the latest of the dynasty, as the letters of the legend belong to the later Gupta period. The obverse shows a bull, with the inscription underneath, "ayu-mitasa;" the reverse apparently has a peacock and palm-tree.

This paper will be published in the Journal, Part I.

The following communication has been received—

Remarks on the Afghans found along the route of the Tal Chotiali Field Force in the spring of 1879.—*By* Lieut. R. C. Temple, B. C. S., F. R. G. S., M. R. A. S.

* See Proceedings for January 1880.

Library.

The following additions have been made to the Library since the Meeting held in January last.

Transactions, Proceedings and Journals,

presented by the respective Societies and Editors.

Berlin. K. preuss. Akad. der Wissenschaften,—Monatsbericht, September and October 1879.

Bombay. The Indian Antiquary,—Vol. VIII, Nos. 100, 101; Vol. IX, No. 102: December 1879 and January 1880.

Bordeaux. Société de Géographie Commerciale,—Bulletin, No. 24, 15th December 1879, and No. 1, 5th January 1880.

Calcutta. Mahábhárata,—No. 42.

The Hague. K. Instituut voor de Taal-Land-en Volkenkunde van nederl. Indië,—Bijdragen, Vol. III, Nos. 1 and 2.

Hanover. Geographische Gesellschaft,—Erster Jahresbericht, 1879.

London. Athenæum,—Nos. 2721—2725.

———. Geological Society,—List of Fellows on November 1st, 1879.

———. ———. Quarterly Journal, Vol. XXXV, Part 4, November 1879.

———. Institution of Mechanical Engineers,—Proceedings, No. 4, August 1879.

———. Nature,—Vol. XXI, Nos. 529, 531, 533.

———. Royal Astronomical Society,—Monthly Notices, Vol. XL, No. 1, November 1879.

Herschel, Major.—Note on the Difference of Variation of Gravity at Revel and St. Petersburgh; and on Grischow's Pendulum Observations at other stations.
Draper, Prof. J. C.—On a Photograph of the Solar Spectrum, showing Dark Lines of Oxygen.

———. Royal Geographical Society,—Proceedings, Vol. I, No. 12, December 1879.

———. Royal Microscopical Society,—Journal, Vol. II, No. 7, December 1879.

Mayall, J.—Immersion Stage Illuminator. Record of Current Researches relating to Invertebrata, Cryptogamia, Microscopy, &c.

Munich. Repertorium für Experimental Physik,—Vol. XV, No. 12, 1879.

Palermo. Società degli Spettroscopisti Italiani,—Memorie, Disp. 8, August 1879.

Paris. Journal Asiatique,—Vol. XIV, No. 2, August—September 1879.

———. Société d'Anthropologie,—Bulletin, Vol. II, No. 3, April—July 1879.

———. Société de Géographie,—Bulletin, November 1879.

———. Société Zoologique de France,—Bulletin, Parts 5 & 6 for 1878, and Parts 1 to 4 for 1879.

1879. *Bureau, Dr. L.*—Recherches sur la mue du bec des oiseaux de la famille des Mormonidés.

Pisa. Società Toscana di Scienze Naturali,—Processi Verbali, Adunanza del di 9 Novembre 1879.

Roorkee. Professional Papers on Indian Engineering,—Vol. IX, No. 35, January 1880.

Washington. Geological and Geographical Survey of the Territories,—Bulletin, Vol. V, Nos. 2 and 3.

Miscellaneous Presentations.

Report on the Administrations of the License Tax in Bengal for 1878-79. Fcp., Calcutta, 1879.

Records of the Geological Survey of India,—Vol. XII, Part 4, 1879.

Waagen, Dr. W.—Note on the "Attock Slates" and their probable Geological Position. *Theobald, W.*—On a Marginal Bone of an undescribed Tortoise, from the Upper Siwaliks, near Nila in the Potwar, Punjab. *Foote, R. B.*—Sketch of the Geology of the North Arcot District. *Wynne, A. B.*—On the Continuation of the Road Section from Murree to Abbottabad.

Bengal Secretariat.

Ravenshaw, J. H. Gaur; its Ruins and Inscriptions. Fol., London, 1878.

Mrs. G. H. Damant.

Report on the Administration of the North-West Provinces and Oudh for the year ending March 31st, 1879. 8vo., Allahabad, 1879.

Govt. of the North-West Provinces.

The Indian Antiquary,—Parts 100, 101 and 102.

Home, Revenue and Agril. Dept.

Registers of Original Observations in 1879, reduced and corrected. January 1879.

Meteor. Reporter to the Govt. of India.

Periodicals Purchased.

Calcutta. The Calcutta Review,—No. 139, January 1880.

———. The Indian Medical Gazette,—Vol. XV, No. 2, February 1880.

Geneva. Archives des Sciences physiques et naturelles,—Vol. II, No. 12. 15th December 1879.

Giessen. Jahresbericht über die Fortschritte der Chemie. 1879, Part II.

Göttingen. Gelehrte Anzeigen,—Nos. 49—51.

———. Nachrichten,—No. 17.

Leipzig. Annalen der Physik und Chemie,—Vol. VIII, Part 4.

———. Beiblätter,—Vol. III, No. 12.

London. The Academy,—Nos. 398—402.

———. Journal of Botany,—Vol. VIII, No. 204, December 1879.

Hartog, M. M.—Notes on *Sapotaceæ*.—II.

———. British Association for the Advancement of Science,—Report of the Meeting held at Sheffield, in August 1879.

———. The Chemical News,—Vol. XL, Nos. 1047, 1048; Vol. XLI, Nos. 1049—1051.

———. The Entomologist,—Vol. XII, No. 199, December 1879.

———. The Entomologist's Monthly Magazine,—Vol. XVI, No. 187.

Lewis, G.—Diagnoses of new *Elateridæ* from Japan. *Gosse, P. H.*—Singular occurrence in a Dipterous insect.

———. The Ibis,—Vol. III, No. 12, October 1879.

Seebohm, H.—Remarks on certain Points in Ornithological Nomenclature. *Tristram, H. B.*—On a Collection of Birds from the Solomon Islands and New Hebrides. *Wardlaw-Ramsay, R. G.*—Ornithological Notes from Afghanistan,—No. I. *Wharton, H. T.*—On the Orthography of some Birds' Names. *Marshall, G. F. L.*—On a new Pheasant from the North-West Himalayas. *Gurney, J. H.*—Notes on a "Catalogue of the Accipitres in the British Museum," by R. B. Sharpe. On the Occurrence of *Ninox borneensis* in Java, and of a large Form of *Scops lempiji* in Sumatra. *Layard, E. L.*—On a new Thrush from the Loyalty Islands Group. *Salvadori, T.*—On a new Hawk of the Genus *Urospizias*, Haup, from Bourou.

———. The Annals and Magazine of Natural History,—Vol. IV, No. 24, December 1879.

Sladen, W. P.—On the Structure of *Astrophiura*, a new and aberrant Genus of *Echinodermata*. *Butler, A. G.*—Descriptions of new Species of Lepidoptera from Japan. *Ridley, H. N.*—On a new Copepod of the Genus *Doridicola*. *Lewis, G.*—On certain new Species of *Coleoptera* from Japan.

———. The Nineteenth Century,—Vol. VI, No. 34, December 1879.

———. The Numismatic Chronicle,—Vol. XIX, Part 3, 1879.

———. The London, Edinburgh and Dublin Philosophical Magazine,—Vol. VIII, Nos. 51 and 52.

No. 51. *Nichols, E. L.*—A new explanation of the Colour of the Sky. *Hutchinson, C. C.*—On the Separation and Estimation of Cadmium in the presence of Zinc; with Remarks upon the Separation of Copper, Cadmium and Zinc. *Rosetti, F.*—Experimental Researches on the Temperature of the Sun. *Rayleigh, Lord.*—Investigations in Optics, with special reference to the Spectroscope.

No. 52. *Rosetti, F.*—Experimental Researches on the Temperature of the Sun. *Hunt, R.*—On the Influence of the Solar Rays on Vegetation. *Schwendler, L.*—On a Simple Method of using an insignificant Fraction of the Main Current produced by a Dynamo-electric Machine for Telegraph Purposes.

London. The Publishers' Circular,—Vol. XLII, Nos. 1014 and 1015.

———. The Monthly Journal of Science,—Vol. I, No. 72, December 1879.

The Action of Light on Plants. Are the Chemical Elements Simple Bodies? Darwinism and Articulate Speech.

———. Journal of the Society of Arts,—Vol. XXVIII, Nos. 1413—1417.

New Haven. The American Journal of Science and Arts,—Vol. XVIII, Nos. 106—108, October—December 1879.

No. 106. *Draper, H.*—Coincidence of the Bright Lines of the Oxygen Spectrum with Bright Lines in the Solar Spectrum.

No. 107. *Marsh, O. C.*—History and Methods of Palæontological Discovery. New Jurassic Mammals.

No. 108. *Draper, H.*—Photographing the Spectra of the Stars and Planets. *Brooks, W. K.*—Artificial Fertilization of Oyster Eggs, and Embryology of the American Oyster. *Broadhead, G. C.*—Origin of the Loess. *Marsh, O. C.*—New Jurassic Reptiles.

Paris. Annales de Chimie et de Physique,—Vol. XVIII, November 1879.

———. Comptes Rendus,—Vol. LXXXIV, Nos. 7 and 17; Vol. LXXXV, Nos. 6, 17 and 26; Vol. LXXXVII, Nos. 2 and 21; Vol. LXXXIX, Nos. 23—26; Vol. XC, No. 1.

———. ———. Index to Vols. LXXXVI and LXXXVIII.

———. Journal des Savants,—Vol. for 1839, and No. for December 1879.

———. Revue Critique,—Vol. VIII, Nos. 50—52; Vol. IX, Nos. 1 and 2.

———. Revue des deux Mondes,—Vols. XCIX and CIV; Vol. XXXVI, Part 3; Vol. XXXVII, Parts 1 and 2.

———. Revue Scientifique,—Vol. XVII, Nos. 24—26; Vol. XVIII, Nos. 27 and 28.

Books Purchased.

Broca, P. Instructions craniologiques et craniometriques. 8vo., Paris, 1875.

Candolle, A. P. de. Prodromus Systematis Naturalis Regni Vegetabilis. 17 Vols. 8vo., Paris, 1824-73.

Candolle, A. & C. de. Monographiæ Phanerogamarum Prodromi nunc continuatio, nunc revisio, 2 Vols. 8vo., Paris, 1878-79.

Chenu, Dr. J. G. Manuel de Conchyliologie et de Paléontologie conchyliologique. 2 Vols. Rl. 8vo., Paris, 1859-62.

Frederici, Karl. Bibliotheca Orientalis pour 1878. Sm. 4to., Leipzig, 1879.

Helmholtz, H. Théorie physiologique de la Musique. 8vo., Paris, 1874.

Mezö-Kövesd, Ch. E. Ujfalvy de. Atlas Anthropologique des Peuples de Ferghanah. 8vo., Paris, 1879.

Parliamentary Papers. East India (Silver). No. 369. Fol., London, 1879.

Schefer, Ch. Relation de l'Ambassade au Kharezm de Riza Qouly Khan. 8vo., Paris, 1879.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR MARCH, 1880.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 3rd instant, at 9 P. M.

DR. RÁJENDRALÁLA MITRA, Vice-President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the Home, Revenue and Agricultural Department,—(1) Selections from the Records of the Government of India, Home, Revenue and Agricultural Department, Nos. CLIX and CLX, (2) The Stûpa of Bharhut: by Major General A. Cunningham, (3) A Comparative Grammar of the Modern Aryan Languages of India. Vol. III. The Verb: by J. Beames, and (4) Hindu Tribes and Castes. Vol. II: by Rev. M. A. Sherring.

2. From the British Museum,—Descriptions of new species of *Hymenoptera* in the collection of the British Museum; by Frederick Smith.

3. From the K. Institut voor de Taal-Land-en Volkenkunde van Nederl. Indië,—Reizen naar Nederlandsch Nieuw Guinea in de jaren 1871, 1872, 1875-76; by P. J. B. C. Robidé van der Aa.

4. From the Government, N. W. P.,—(1) Statistical, Descriptive and Historical account of the North West Provinces of India. Vol. V. Rohilkhand Division, Part I: by H. C. Conybeare, edited by E. T. Atkinson, (2) List of Sanskrit MSS. discovered in Oudh during the year 1879: by Pandit Devi Prasad.

5. From the Translator,—Vikramorvaçi, ourvaçi donnée pour prix de l'heroïsme: drame en cinq actes de Kalidasa. Traduit du Sanscrit par Ph. Ed. Foucaux.

6. From the Nantisk Meteor. Byran i Stockholm,—(1) Instruktion för Meteorologiska Observationers Utförande vid Svenska Fyrstationer, (2)

Instruktion för Meteorologisk Loggboks Förande, (3) Instruktion för Hydrographiska Observationers ut Förande vid Svenska Fyr-och Lots-Stationer.

7. From the K. K. Geol. Reichsanstalt in Wien,—Zur Kenntniss der Fauna des untersten Lias in den Nordalpen: by Dr. M. Neumayr.

8. From the Authors:—(1) Report on the miscellaneous old Records of the India Office, Nov. 1st 1878: by Dr. G. Birdwood. (2) Sanskrit Wörterbuch in kürzerer Fassung. Erster Theil. Die vocale: by Otto Böhtlingk, (3) Morphological notes bearing on the origin of Insects: by J. Wood-Mason, (4) Essays on the Language, Literature and Religion of Nepál and Tibet: by B. H. Hodgson.

9. From the Marine Survey Department,—List of Light-Houses and Light-Vessels in British India: by R. C. Carrington.

10. From the St. Xavier's College Observatory,—A Statement of the Results of the Observations made from July to December, 1879.

11. From the Muséum d'Histoire Naturelle de Lyon,—Recherches sur les mastodontes et les faunes mammalogiques qui les accompagnent: by Dr. Lortet and E. Chantre.

12. From the K. Akademie der Wissenschaften in Wien,—Zweite Abhandlung über die Wasserabnahme in den Quellen, Flüssen und Strömen: by Gustav ritter von Wex.

13. From the Secretary of State for India,—The Bondage and Travels of Johann Schiltberger: by Commander J. B. Telfer.

The following Gentlemen, duly proposed and seconded at the last Meeting, were balloted for and elected Ordinary Members—

Lieut. R. C. Tufnell.
A. C. Carlleyle, Esq.
Ramesvar Maliah, Esq.

The following Gentlemen are candidates for ballot at the next Meeting—

1. W. Fiddian, Esq., Rampur Beaulieu, proposed by E. V. Westmacott, Esq., seconded by J. Crawfurd, Esq.

2. N. Elias, Esq., proposed by H. B. Medlicott, Esq., seconded by R. Lydekker, Esq.

3. Bábu Bipina Chandra Rai, proposed by Dr. Rájendralála Mitra, seconded by Bábu Pratápa Ch. Ghosha.

4. Ananda Ráma Gajapati, Rájá of Vizianagram, proposed by Rájá Satyánanda Ghoshál, seconded by Moulvie Abdul Latif Khán Bahadur.

The SECRETARY reported that Major W. R. M. Holroyd had requested that his withdrawal might be cancelled.

The SECRETARY read the names of the following Gentlemen appointed

by the Council to serve on the several Committees during the ensuing year:—

FINANCE COMMITTEE.

J. Westland, Esq., C. S.
Dr. Rájendralála Mitra, C. I. E.
J. C. Douglas, Esq.
H. Beverley, Esq., C. S.

LIBRARY COMMITTEE.

Dr. Rájendralála Mitra, C. I. E.
Col. J. F. Tennant, R. E.
Major-General J. T. Walker, F. R. S.
Dr. D. D. Cunningham.
Dr. W. K. Waller.
A. W. Croft, Esq., M. A.
C. H. Tawney, Esq., M. A.
Hon'ble Whitley Stokes, C. S. I., C. I. E.
Bábu Prannath Pandit, M. A.
H. F. Blanford, Esq., A. R. S. M., F. G. S.
G. Nevill, Esq.
Dr. O. Feistmantel.
J. Eliot, Esq., M. A.
A. Pedler, Esq.
H. Beverley, Esq., C. S.
Dr. Mohendralála Sircár.
J. C. Douglas, Esq.
Bábu Protápa Chandra Ghosha, B. A.
Dr. T. R. Lewis.

PHILOLOGICAL COMMITTEE.

Dr. Rájendralála Mitra, C. I. E.
C. H. Tawney, Esq., M. A.
Major-General A. Cunningham, C. S. I.
J. Beames, Esq., B. C. S.
F. S. Growse, Esq., M. A., C. S., C. I. E.
Rev. K. M. Banerjea, LL. D.
Babu Gaur Dás Bysack.
Dr. Mohendralála Sircár.
Hon'ble J. O'Kinealy, C. S.
Hon'ble Whitley Stokes, C. S. I., C. I. E.
Dr. G. Thibaut.

H. Rivett-Carnac, Esq., C. S., C. I. E.
Moulvie Abdul Latif Khán, Bahádur.
Moulvie Kabiruddin Ahmad.
Babu Dijendranath Thakur.
Bábu Prannath Pandit, M. A.
Babu Protápa Chandra Ghosha, B. A.
Captain H. W. Clarke, R. E.
Major H. S. Jarrett.
J. F. Browne, Esq., C. S.

NATURAL HISTORY COMMITTEE.

Dr. O. Feistmantel.
Dr. D. Waldie.
A. O. Hume, Esq., C. S.
G. Nevill, Esq.
Dr. D. D. Cunningham.
Dr. J. Armstrong.
Dr. G. King.
Dr. W. Schlich.
Dr. D. Brandis.
S. E. Peal, Esq.
W. E. Brooks, Esq., C. E.
R. Lydekker, Esq., B. A.
Capt, G. F. L. Marshall, R. E.
Lieut. F. W. Jarrad, R. N.
L. Schwendler, Esq.
Dr. T. R. Lewis.

PHYSICAL SCIENCE COMMITTEE.

Major-General J. T. Walker, F. R. S.
Dr. D. Waldie.
H. F. Blanford, Esq., A. R. S. M., F. G. S.
Dr. D. D. Cunningham.
A. Pedler, Esq.
A. Cappel, Esq.
J. Eliot, Esq., M. A.
Col. J. F. Tennant, F. R. S.
Commander A. D. Taylor.
Dr. O. Feistmantel.
R. Lydekker, Esq., B. A.
Hon'ble J. O'Kinealy, C. S.
J. C. Douglas, Esq.
F. Fedden, Esq.

COINS COMMITTEE.

Dr. Rájendralála Mitra, C. I. E.
Col. J. F. Tennant, F. R. S.
Rev. M. A. Sherring.
Major-General A. Cunningham, C. S. I.
Col. F. W. Stubbs.
H. Rivett-Carnac, Esq, C. S.

DR. HOERNLE exhibited 12 Arakan coins, two of which belong to the Phayre Museum in Rangoon, and ten to the Indian Museum in Calcutta. They are described in the following note by Dr. Rájendralála Mitra.

Coins of this class were first brought to the notice of the Society by Capt. J. Latter in 1846. Four specimens were then figured and described (*Journal*, Vol. XV, plate III), two of which bore no inscription, and the inscriptions on the other two were not read. Capt. Latter called them 'Symbolical coins of Arakan.' In 1872, Capt. Fryer obtained two other specimens, and, in the note which he communicated to the Society on them, (*Journal*, XLI, pp. 201 f) he described them as belonging to the Vaisáli dynasty of Arákán. The inscriptions on them and on Capt. Latter's coins were read by Bábu Pratápachandra Ghosha. One he read *Dharmachandra*, another *Srí-ta-chandra* and a third *Srí-vikrama*. All these coins had a couchant bull on the obverse, and a conventional trident *(trisúla)* on the reverse. In 1878, Mr. Blochmann obtained from the Phayre Museum at Rangoon, five specimens of this class of money, bearing on the obverse a conch-shell, instead of the couchant bull, and I read the name on them to be Vijaya, taking Bábu Pratápachandra Ghosha's reading of Srívikrama to be erroneous. The first name I took to be correct, but I could make nothing of the second (*Proceedings* for 1878, pp. 102-3.) The several specimens now obtained enable me to settle its reading and also to supply a new name. The first letter on No. 1 of the Phayre Museum specimens is unquestionably *Srí*, as read by Bábu Pratápachandra Ghosha. It is pronounced by the Arákánese and the Burmese as a word of two syllables, *Siri*. The second letter, read *ti* by Bábu Pratápachandra Ghosha, appears in most of the specimens like *te*, for the mark for *i* is generally left slanting upwards and backwards, whereas that for *e* is curved downwards, and this downward curvature is distinct on some specimens. A dot over the *t* is also perceptible, and that makes the word *teñ*. The last word *Chandra* is unquestionable. The result is *Srí-teñ-chandra*, and this is the name of the seventh prince of the Vaisáli dynasty of Arákán. In the Burmese style the name is written *Siri taing chandra*. The prince lived, according to Capt. Fryer, in A. D. 903. The letters of the name are of about this date, *i. e.*, the Gupta type merging into the Kuṭila.

The letters on No. 2 of the Phayre Museum and on most of the Indian Museum specimens are older, being somewhat like the old Pálí* of the Laṭ inscriptions. They are also fairly legible, except the first, which is very like a *t*, but I think it is intended for an *s*. Reading it as *t* the name would be *tari kádu*, and as *s*, *Siri-kádu*. The last is what I take to be the right reading, for it corresponds with the name of the second rájá of the Arákán kings as given in Mr. Paton's list, published in the XVIth Volume of the *Researches*. The name there is written Sorea kádu, and the prince is said to have lived in A. D. 755 = Mug era 117.

Of Vijaya and Dharma-chandra I have not been able to find out the dates; but from the character used on their coins I infer that they must have lived between the dates of Kádu and Teñ-chandra. The *j* of Vijaya is of an older type than the *dh* of Dharma-chandra. Arranged chronologically, Sirikádu comes in 755 A. D.; Vijaya after him, some generations removed; Dharma-chandra third, again some unknown generations removed; and Siri-teñ-chandra in 903 A. D.

Dr. Hoernle remarked, with regard to this note, that the date assigned to Siri kádu which was based on a comparison of the Mug era with the Christian, appeared to be doubtful, as the form of the letters on his coins seems to be of a much older type, *viz.*, of the 2nd or 3rd century, A. D.

Dr. HOERNLE exhibited the Rubbing of a Persian Inscription from Kashmir, sent by Mr. A. Constable, who writes that the inscription is on a slab of black slate, well polished and finished, measuring 21½ by 12 by 2½ inches. He found the slab lying on the ground near the ruins of a Musjid on "Lanka Island," in the Woolar Lake in Kashmir. The copy was taken in September 1874. The Inscription is as follows:

این بقعه چو بنیان فلک محکم باد مشهور بزین دیب در عالم باد
شه زین عباد تا در و جشن کند پیوسته چو تاریخ خودش خرم باد

Major Jarrett in a note which was read to the meeting, translates it:—

"May this edifice be as firm, as the foundations of the Heavens,
May it be the most renowned ornament of the Universe,
As long as the Monarch Zayn Ibád holds festival therein,
May it be like the date of his own reign—happy."

The word, translated "happy," is in the original, *Khuram*, the numerical value of the letters of which is 847, meaning that year of the Hijra era, equal to A. D. 1443-4. At that time Zayn Ibád or, as he is commonly

* The Pálí letters, as constituents of a classical alphabet associated with the Pálí religious books, and not used for the ordinary affairs of every-day life, were not subject to those influences which lead to deterioration, and therefore retained their primitive forms longer in Burmah than elsewhere.—R. M.

called, Zayn ul Ábidin was ruler of Kashmir. He was a son of Sultán Sikandar, and succeeded his brother Ali on the throne of Kashmir in A. H. 828 or A. D. 1424-5. In earlier life he had been, for some years, a captive of Timur in Samarkand, from whence, on his return, he introduced various new industries in his own country. His reign was a prosperous and peaceful one. He artificially constructed the island of Lanka in the Woolar lake and built a mosque on it. On the completion of Lanka, the king ordered a great festival to be held. Verses were written by the poets to commemorate this event, and among these the inscription under notice by Ahmad Allámah Kashmírí was engraved upon a stone and placed above the Mihráb, or Sanctuary of the Mosque.

This inscription, together with Major Jarrett's note, will be published in the Journal, Part I.

Dr. Hoernle exhibited an eye-copy of a Páli rock-cut inscription sent by Mr. A. M. Markham, Collector of Allahábád, and discovered by him in a cave near the falls of Keoti Kuṇḍa on the river Mahánáá, a tributary of the Taṉwas or "Tonse" in the Riwa State. The inscription is as follows:

हरितो पुतेण सोनकेन कारिता पुखरिनी

and means: "the Pool-cave caused to be made by Ṣaunaka the son of Haritá." The cave takes its name "Pool" from a very picturesque natural pool, excavated by the fall of the Mahánáá river, which precipitates itself over a perpendicular drop of 336 feet, unbroken even by a crag. In another cave, near another somewhat similar fall, there are said to be several square yards of very well painted figures and hunting and battle scenes, in a rather bright red.

The following papers were read—

1. *Zoological Notes.—By* L. Schwendler.

The very successful trial of punkha-pulling by means of compressed air, which I had an opportunity of witnessing on the 27th January 1880 at Fort William, Calcutta, where my friend the Honorable C. E. Parsons has introduced his ingenious invention in the Dalhousie Barracks; and my own endeavours to devise a practical method for pulling Pankhas, *viz.*, by the transmission of power conveyed by the electric current as produced by the present dynamo-electric machines;* reminded me again of an interesting fact which I was told some years ago, *i. e.*, that the Langur monkeys of India *(Semnopithecus Entellus)*, if the necessary trouble is taken, could be made useful and cheap substitutes for the ordinary punkha-coolies at present generally in use in India.

* Philosophical Magazine (Supplement), December 1879, and Part II of the Journal, Asiatic Society of Bengal, 1879.

My trustworthy informant, Bábu B. Pyne, a member of the Government Telegraph Department, kindly placed at my disposal the following statement on the subject. The Babu says:—

"Some years ago I had a Langur which, when standing erect, measured fully 2′ 6." The animal was very powerful, and could easily pull a punkha measuring 8′ in length. It was a male, and, even when young, showed a disposition to be highly savage. The older he got the more savage he became. Seeing the great power this monkey had, I wanted to utilize it, and therefore intended to employ him for the purpose of pulling punkhas. The teaching I effected in the following manner:—the monkey was tied by the waist close to a strong pole, so that it could not move either backwards or forwards, or right or left. Both hands were tied to a rope attached to a punkha which was regularly pulled from the other side by a man. Thus the animal had to sit in one place, and could only move its hands up and down with the punkha rope.

"In this way the monkey, in a comparatively short time, learnt to pull the punkha by himself, and was so employed by me for several years. He always kept in first rate health, enjoyed his work immensely, and did it equally well, if not better, than a cooly. During the rains he suffered from fever and ultimately died. Putting now this trained monkey in the place where the man used to pull the punkha, and a new Langur in the place where the trained monkey formerly sat, I attempted to teach successively *four* more monkeys, two of which were females. I succeeded perfectly in teaching the males, but was quite unsuccessful with the females."

I thought this might be of interest to the Society, since it appears to me the first authentic record of the power of a monkey having been employed for doing *useful work*. There is a certain amount of intelligence required to do this work, since the arms, in their up and down movements, have to keep time with the swinging punkha.

When the reading of the above paper was concluded, Mr. Schwendler mentioned some other instances in which the display of intelligence by monkeys had been noticed. In particular, he mentioned a case in which a monkey, which had sustained a fall from trusting to a rotten branch while swinging on a tree, had been observed afterwards to examine the branches of the tree, and to break off those which it found to be rotten. Some discussion ensued as to whether the action of the monkey in this case was the result of intelligence, and some of the members present were of opinion that it might have been the result simply of anger caused by the fall. Mr. Schwendler, however, stated that he had for long made the habits of animals a study, and that he was convinced of the fact that monkeys were possessed of much intelligence; and he vouched for the authenticity of the statements made in the paper read regarding the monkeys which were taught to pull a punkha.

2. *Remarks on the Afghans found along the Route of the Tal Chotiali Field Force, in the Spring of* 1879.—*By* Lieut. R. C. Temple, B. S. C., F. R. G. S., M. R. A. S., &c. (With two maps and various sketches.)

(Abstract.)

This is the last of a series of papers on subjects connected with the Afghans, written by the author and communicated to various Societies.* After a few remarks on the geography of the route, which is illustrated by two maps, the author proceeds to review the well-known account of the Afghans of their own origin from a Jewish source, and next to describe in detail the history and peculiarities of the various tribes and clans of Afghans. This is followed by several chapters on the distribution of the Afghan tribes, their polity, their civilization, and their language† as illustrated by their place-names.

This paper will be published in the Journal, Part I.

3. *Coins Supplementary to Thomas' "Chronicles of the Pathan Kings."—By* Chas. J. Rodgers, Esq, *Principal, Normal College, Amritsar.* (With two Plates.)

(Abstract.)

The Chronicles of the Pathan kings is a very full work, but naturally it is not exhaustive. Continued search brings out further coins which from time to time have to be described. In the present paper, the author describes about forty coins, which are believed to be as yet unpublished.

This paper will be published in the Journal, Part I.

4. *Specimens of Balochi Poems, transcribed in Roman characters, and translated, with Explanatory Notes.—By* M. Longworth Dames, Esq., C. S.

(Abstract.)

These poems are widely spread in the Balochi country where they are recited by the bards, called *Doms* or *Loris*, to accompanying airs or chants. They are current in slightly differing versions. It is probable that they are of considerable age; for they contain many antiquated grammatical forms, and their versification is loose and formless. The paper gives three of these poems, entitled: "The Wanderings of the Rind Balochis," "The Quarrel of Mír Chákar and Gwaharám," and "Dostem and Shíren." The second is only one part of an extensive cycle of poems relating to Mír Chákar, who is the great legendary hero of the Rind Balochis and is represented by them

* See Journal, A. S. B., for 1879.

† The best Grammar on the Pashtu Language is one by Dr. Ernest Trumpp, first published in the Journal of the German Oriental Society, Vol. XXI.

as having led them into the countries they now occupy from Makrán, and as having founded a kingdom with its capital at Seví (Síbí). The third relates the romantic story of Dostem, a young Balochi warrior, and his bride Shíren.

This paper will be published in the Journal, Part I.

5. *Remarks on a Páli Inscription from Bhárhat.*—*By* RÁJENDRALÁLA MITRA, LL. D., C. I. E.

Some time ago I translated for General Cunningham a Pálí Inscription in the Láṭ character found on the Eastern gateway of the Bhárhat Stúpa. I had then before me a reduced eye-copy, and was doubtful about some of the letters. The last word of the record puzzled me most, and I suggested a reading different from what the letters before me would warrant. The gateway has since been removed to the Indian Museum, and I have had several opportunities of studying the record as inscribed on the stone. The result of this study I now desire to lay before the Society.

The record occurs on the left pillar of the gateway. The pillar is a compound one, made up of four shafts each having eight facets. The record is inscribed on two facets of the front and on three facets of the hind shaft. It is in a perfect state of preservation, and comprises four lines of matter arranged in five columns, the second and the third line extending to the fourth column and the fourth to the third. The words are :—

	1	2	3	4	5
Line 1	सुगणं	रञे	रञ्ञ	गागीपुतस	विसदेवस
	Sugaṇam	raje	rajna	Gágíputasa	Visadevasa
	1	2	3	4	
„ 2	पौतेण	गोतीपुतस	अगराजुस	पुतेणं	
	pauteṇa	Gotiputasa	Agarájusa	puteṇa	
	1	2	3	4	
„ 3	वाछीपुतेण	धंनभूतिणा	कारितं	तोरणं	
	Váchhiputeṇa	Dhanabhutiṇá	káritam	toraṇam	
	1	2	3		
„ 4	सिलाकंमतो	च	उपंण.		
	silákammato	cha	upaṅṇa.		

The first word of the first line is obviously the Pálí form of the Sanskrit *Srughna*, the name of a country ; but the case-affix attached to it is incorrect. In Sanskrit and in Pálí the word is masculine, and in the nominative case in Páli it should have no nasal mark after it. Assuming that in Pálí it was used in the neuter gender, still, the nasal mark for the neuter nominative should not be used, for the sentence has a different nominative. The word should be in the locative, *sugane* 'in Sugana.' If it be assumed

that it has been compounded with the second word raje which is in the locative, the dot for the case-mark would not be wanted. It is, therefore, obviously wrong, and is due either to the engraver having mistaken the mark of the locative *e*, or it is a blot. The second word, *raje* for *rájye*, being in the locative, cannot qualify the nominative. The meaning of the two words is: "in the kingdom of Sugana." The third word, *rajña* for *rájña*, is in the genitive, and qualifies the fifth word *Visadeva*, which is also in the genitive case. The fourth word is also an epithet qualifying Visadeva. It means "son of Gágí." The first word of the second line is in the instrumental case, and qualifies the causal nominative Dhanabhutiná of the 3rd line. It means "by the grandson." The second word is clear enough; it means "son of Goti," and is an epithet qualifying the third word *Agarájusa*, a proper name in the genitive, governing the last word *putena*, which is an epithet of the 2nd word of the third line. The first word of the 3rd line is also an epithet of the same kind. It means "by the son of Váchhi." The second word is the causal nominative of the sentence, and agrees with the causal participle which follows it, and which governs the objective case represented by the last word. The dots after the 3rd and the 4th words are very faint and appear to have been produced by abrasion of the stone, but they are wanted.

In so far the grammatical construction of the sentence and its meaning are perfectly clear; but the last line is very puzzling. Its first word is a compound of *Silá* "a stone" and *Kamma* "work," "fabrication," *i. e.*, sculpture. The long vowel at the end of Silá, is so distinct that I cannot take the word for Sila, "good conduct." It is true that in the Laṭ Pálí writings the vowel-marks are frequently neglected; but the neglect is always shown by omission of vowel-marks, as in *raje* for *rájye*, and not by the insertion of marks where none is wanted; at least, I have nowhere seen an instance of the kind. The word sila, moreover, never takes the long vowel at the end, and, with it, it cannot mean good conduct, or moral merit. The meaning, therefore, must be 'stone carvings,' and this corresponds very well with the subject of the record. In the eye-copy I read the affix at the end of the compound *tá*. This is an affix commonly employed for the formation of abstract nouns, and is not wanted here, but it is often used as an expletive, as in Devatá, and does not disturb the sense,—at least I had no hesitation in accepting it as such. The second word *cha* is a conjunction, equivalent to the English *and*, and its effect is to bring forward the causal nominative Dhanabhuti, who not only caused the toraṇa to be erected, but also added to it sculptured decorations. It can also bring forward the causal verb *káritam*, but if a new verb be supplied it may be let alone. The most puzzling word in the record is *upanna*. When I first read it in the eye-copy I believed the dot over the *p* to be a mistake, and the word was

upána, 'a plinth.' The dot, however, is perfectly clear and unmistakable, and cannot be rejected without assuming an error on the part of the engraver. If no such error be admitted, the word would be an incorrect form of the Sanskrit utpanna = Páli uppanna, "produced." The inaccuracy I allude to results from the omission of one of the p's, but in the old Lat character double letters were frequently, if not invariably, simplified, and this I thought was an instance. I felt too that utpanna, as a neuter participle, could not agree with the causal nominative Dhanabhutiná. The writer of the record had correctly used the causal form in *káritam* and could not be accused of having been ignorant of the causal form of *utpanna*, which is *utpádita*. It could not be made to correspond with the first word of the line silákammatá, for that would be opposed both to grammar and sense. The use of the conjunction *cha* in prose brings forward the nominative Dhanabhuti, and this has to be rejected, and the conjunction declared to have been wrongly put. It had to be, moreover, assumed that the donor did not care to associate his name with the sculptures. In short, I had to accept either an error on the part of the engraver for having accidentally put a dot over a letter where none should exist, or ignorance of grammar on the part of the writer for not knowing the causal form of utpanna, and for putting a conjunction where none was wanted. I had no hesitation, therefore, in accepting the first branch of the alternative. An error on the part of an engraver was much more likely than ignorance of elementary rules of grammar on the part of a writer employed by an unquestionably rich man, probably a king. Moreover, a mistake of the kind was very liable to occur; the long vowel after p, in upána is indicated by a very short dash on top, and it may be confounded for a dot.

My revision of upána, however, I now find, cannot be accepted, as the only fragment of the plinth of the tope seen by General Cunningham, is made of mortar and plaster, and not of sculptured stone, and the railing and the gateway have no plinths. The apparent reading upanna must therefore be accepted, deriving it from the Sanskrit *utpanna* "produced, born, arose;" or from *upapanna* "endowed or embellished," or from *upaghna* "that which is supported." The second appears to me to be the most appropriate, though the derivation is not quite satisfactory.

The correct reading of the first word of the last line I find is not *silákammatá* but *silákammato* for the Sanskrit *silákarmatas*, used in an instrumental sense. Added to the last word it gives the meaning "embellished with stone carvings," a very appropriate epithet for the toraṇa; the *cha* being reckoned a mere expletive.

Putting the results of these remarks together I make out the following meaning of the inscription:—

"In the kingdom of Sugana, (this) toraṇa embellished with stone carv-

ings was caused to be erected by Dhanabhuti, son of Váchhí and of Agaráju, the son of Gotí, and grandson of king Visadeva, son of Gágí."

It will be seen that in this the donor assumes no regal title, nor does he assign any to his father. The word *ríju* is the second member of a compound word, and the two words together make up the personal name. The omission of all titles in the case of the donor may be due to a sense of humility, or to a desire to avoid the display of worldly greatness in a quasi religious monument, but this cannot be predicated of the father, who had probably then demised, as in the case of the grandfather the title has been carefully put in.

It is observable also that the grandfather traces his descent from his mother Gágí, and does not name his father. To Indians of the present day nothing would appear more shocking than this. An adage is current among them to the effect that "a man who is known by his own name is the noblest, he who appeals to his father's name to make himself known, is of middling merit; but he, who has to appeal to his mother's name for the purpose, is vile, and he, who makes himself known by the name of his wife, is the vilest of the vile."* The feeling is so strong in this respect that no gentleman will ever pronounce his mother's name, except when performing a religious rite, or in a legal document. In Bengal the usual plan to indicate a lady who happens to be the wife of the master of the house is to call her *ginní*, "the mistress of the house." Should she happen to have rivals, the fact is indicated by the use of the terms *Baḍa*, *Meja* &c., 'the eldest,' the 'second' and so on, but on no account is the name of any one recited. The same is the case with daughters-in-law, who are described as *Baḍabahu*, *Mejabahu*, and so on. Sometimes when greater precision is wanted the family name of the father of a lady is used thus, *Mitrer báḍir jhí*, "daughter of the house of the Mitras." In the North-Western Provinces, both among Hindus and Muhammadans, the same custom is followed, and the ladies are ordinarily indicated by periphrasis. This was, however, not the custom in former days; and not only the names of ladies of rank were freely used, but metronymics were formed extensively to indicate their children. To judge from the instances so abundant in the Rámáyaṇa and the Mahábhárata the use of metronymics was ordinarily restricted to children born out of wedlock, or what would be the same thing, deserted by their fathers; but unforsaken legitimate children were sometimes so named. Long before the time of the Rámáyaṇa, Páṇini formulated a great number of rules for the formation of metronymics.

From the examples accessible to me it appears that generally the per-

* स्वनामा पुरुषोधन्यः पितृनामा च मध्यमः।
अधमः मातृनामा च पत्नीनामाधमाधमः॥

sonal names of the mothers were used for the formation of metronymics, but the names of their race or country were not invariably rejected. Of the former class the instances at command are abundant. Thus Bhíshma, the great sage and general of the Kuru race, was called Gáṅgeya, because he was born out of wedlock of the River Ganges in a personified form. Hanumán, the monkey general of Ráma, is called Ánjaneya, because he was born of the storm-god Pavana by Anjaná, wife of Keśarí. Vyása, the compiler of the Vedas, is called Satyavatísuta, 'the son of Satyavatí,' a fisherwoman whom Parásara seduced. The Páṇḍava brothers Yudhiṣṭhira, Bhíma, and Arjuna, whose births are euphemistically attributed to Dharma, Indra, and Váyu, are frequently addressed by their metronymic Kaunteyáh, the "sons of Kuntí." One name of Kuntí was Pṛithá, and Arjuna called himself Pártha in honour of her. Dhritaráshṭra born of Ambiká, wife of Vichitravírya by Vyása, is called Ambikásuta. Karṇa, another half-brother of the Páṇḍus, was born of Kuntí before her marriage, and, having been brought up by one Rádhá, bore the metronymic of Rádheya. In the Chhándogya Upanishad there is a remarkable instance of this kind. A boy, about to go to a tutor, asks his mother what was his family gotra, and she replies: "I know not, child, of what gotra you are. During my youth when I got thee, I was engaged to serve many as a maid-servant; I know not of what gotra you are; Jabálá is my name, and Satyakáma thine; say therefore, when asked, that you are Satyakáma Jábála (son of Jabálá)." The youth was accepted as a Bráhmaṇ for his boldness in telling the truth to his tutor, and subsequently he attained great distinction as an expounder of theology. The atheist Jábála, who figures so prominently in the Rámáyaṇa, was a descendant of this youth. Of deserted sons taking the metronymic we have an instance in the Aitareya Bráhmaṇa. The first mother of the Aitareyins was Itará. Her husband deserted her and her infant son, and therefore the latter took the name of his mother, and called himself Aitareya. Lakshmaṇa, forsaken by his father, bore the metronymic of Saumitra, son of Sumitrá.

Of race names the only instance I can call to mind just now is Gautamí, the foster-mother and aunt of Buddha. Of names of females formed by those of their native countries we have Mádrí, named after the country Madra where she was born, and her sons born out of wedlock are called Mádreya: Gándhárí, wife of Dhritaráshṭra, owes her name to her father's country Gándhára, modern Kandhár; Baladeva, transferred from the womb of Devakí to that of Rohiṇí to save him from being destroyed by the Indian Herod Kañśa, bears the name of Rauhiṇeya. Other instances of this kind may be multiplied *ad libitum;* but I suppose they are not wanted. Those I have cited will suffice to show that metronymics were formerly largely used, and that in most instances they implied some flaw in the birth,

or some difference with the male parent. Nor was the circumstance of one's being born out of wedlock, however unpleasant it may be to be told so, held a bar to distinction in learning or social rank in ancient times. Not to advert to modern Dukes, Marquisses, Lords, Baronets, Rájás, Navábs, and others, the bar sinister on whose escutcheons has not in the least interfered with their rising in social rank in our times, the renown of Vyása, Jábála and the Páṇḍus suffices to show that none need doubt the fact of metronymics having been derived from the personal names of mothers, and of Indian people having used them without scruple.

The three female names given in the inscription, Gágí, Gotí and Váchhí, in their Sanskrit forms would be Gárgeyí or Gárgyí, Gautamí, and Vátsí, and these are largely used in race or Gotra names; but there is no reason to suppose that they have been used in the inscription to indicate gotras. According to Hindu law no male person can inherit the gotra of his mother, or wife. On the contrary every woman ceases to be of the gotra of her father the moment she is married, and the marriage rite includes a ritual for effecting this change. No Hindu, therefore, can be expected to appeal to the gotra of his mother's father. Personal names may be formed of gotra names; but when so formed they are strictly proper names, indicating particular individuals, and not races or tribes. Moreover, a patronymic or a metronymic formed by an affix may indicate an immediate descendant, or one, two or more generations removed; and when great precision is sought, it is usual to avoid affixes, and to compound the name with the word putra, "son," whereby the name becomes at once specific, and the nearest relationship is implied. In the inscription this specific form, Gágíputra, is used, and therefore no legitimate doubt can be entertained of the names having been intended for particular individuals.

6. *A List of the Earthquakes recorded in Assam during the year* 1879. *Communicated by the Meteorological Reporter to the Government of Bengal.*

This will be published in the Journal Part II.

The following communication has been received.

Note on some copper Buddhist Coins.—By H. Rivett-Carnac, C. S., C. I. E.

LIBRARY.

The following additions have been made to the Library since the Meeting held in February last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

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Calcutta. The Mahábhárata,—No. 43.

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Hennessey, J. B. N.—Further particulars of the Transit of Venus across the Sun, December 9, 1874; observed on the Himalaya Mountains, Mussoorie, at Mary-Villa Station, Lat. 30° 28′ N., Long. 78° 3′ E., height above the sea 6,765 feet, with the Royal Society's 5-inch Equatorial. Note III. *Stewart, Balfour* and *Dodgson, W.*—Preliminary Report to the Committee on Solar Physics on the evidence in favour of the Existence of certain Short Periods common to Solar and Terrestrial Phenomena. *Hannay, J. B.* and *Hogarth, J.*—On the Solubility of Solids in Gases. *Galton, F.*—The Geometric Mean in Vital and Social Statistics. *McAlister, D.*—The Law of the Geometric Mean.

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Mance, H. C.—Remarkable Phosphorescence in the Persian Gulf. *Ayrton,*

W. E.—Note on Mr. Mance's letter on "Remarkable Phosphorescence in the Persian Gulf."

Munich. Repertorium für Experimental-Physik,—Vol. XVI, No. 1.

Paris. Journal Asiatique,—Vol. XIV, No. 3.

Schaffhausen. Schweizerische entomologische Gesellschaft,—Mittheilungen, Vol. V, No. 9.

Schindler, Dr. E.—Die Larve des *Scymnus analis* Fb. ein Wachsproducent.

Turin. Reale Accademia delle Scienze,—Memorie, Vol. XXXI.

Vienna. Anthropologische Gesellschaft,—Mittheilungen, Vol. IX, Nos. 7—8.

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Nehring, Dr. A.—Fossilreste Kleiner Säugethiere aus dem Diluvium von Nussdorf bei Wien.

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Books and Pamphlets,

presented by the Authors, Editors and Translators.

Birdwood, Dr. G. Report on the Miscellaneous Old Records of the India Office, November 1st 1878. Fol., London, 1879.

Boehtlingk, O. Sanskrit Wörterbuch. Part I. Die Vocale. 4to., St. Petersburgh, 1879.

Foucaux, Ph. Ed. Vikramorvaçi; ourvaçi donnée pour prix de l'heroïsme: drame en cinq actes de Kalidasa. Traduit du Sanscrit. 12mo., Paris, 1879.

Hodgson, B. H. Essays on the Languages, Literature and Religion of Nepâl and Tibet. 8vo., London, 1874.

Wood-Mason, J. Morphological notes bearing on the Origin of Insects. 8vo., London, 1879. Pamphlet.

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PRASÁD, PANDIT DEVI. List of Sanskrit MSS. discovered in Oudh during the year 1879. 8vo., Allahabad, 1879.

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BEAMES, J. A Comparative Grammar of the Modern Aryan Languages of India. Vol. III. The Verb. 8vo., London, 1879.

CUNNINGHAM, MAJOR-GENERAL A. The Stûpa of Bharhut. Fol., London, 1879.

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Annual Report of the Geological Survey of India, and of the Geological Museum, Calcutta, for the year 1879. *King, W.*—Additional Notes on the Geology of the Upper Godavari basin in the neighbourhood of Sironcha. *Lydekker, R.*—Geology of Ladak and neighbouring districts. Teeth of Fossil Fishes from Rumri Island and the Punjab. *Feistmantel, Dr. O.*—Note on the Fossil Genera *Nöggerathia*, Stbg., *Nöggerathiopsis*, Fstm., and *Rhiptozamites*, Schmalh. in palæozoic and secondary rocks of Europe, Asia, and Australia. Notes on Fossil Plants from Kattywar, Shekh Budin and Sirgujah. *Clark, G. T.*—On Volcanic foci of eruption in the Konkan.

The Indian Antiquary, Vol. IX, Part 103, February 1880.

HOME, REV. AND AGRIL. DEPARTMENT.

WEX, G. RITTER VON. Zweite Abhandlung über die Wasserabnahme in den Quellen, Flüssen und Strömen bei gleichzeitiger Steigerung der Hochwässer in den Culturländern. 4to., Vienna, 1879.

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K. INST. VOOR DE TAAL-LAND-EN VOLKENKUNDE VAN NEDERL. INDIE.

NEUMAYR, DR. M. Zur Kenntniss der Fauna des untersten Lias in den Nordalpen. 4to., Vienna, 1879.

K. K. GEOL. REICHSANSTALT IN WIEN.

Report on the Administration of the Madras Presidency during the year 1878-79. 8vo., Madras, 1879.

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CARRINGTON, R. C. List of Light-Houses and Light-Vessels in British India, including the Red Sea and Coast of Arabia (Suez to Singapore). Corrected from official information to 1st February, 1880. Fifth issue. Obl. 4to., Calcutta, 1880.

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Report on the Administration of the Punjab and its Dependencies, for 1878-79. 8vo., Lahore, 1879.

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Miers, E. J.—On the *Squillidæ*. *Cope, E. D.*—On the Genera of *Felidæ* and *Canidæ*. *Waters, A. W.*—On the terms Bryozoa and Polyzoa. *Pringsheim, M.*—On the Action of Light and the Function of Chlorophyll in Plants.

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Challis, Rev. Prof.—On Newton's "Regula Tertia Philosophandi." *Rücker, A. W.*—On a Suggestion as to the Constitution of Chlorine, offered by the Dynamical Theory of Gases. *Rayleigh, Lord*—Investigations in Optics, with special reference to the Spectroscope. *Walenn, W. H.*—Note on a Method of Checking Calculations.

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR APRIL, 1880.

The monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th April, at 9. 15 P. M.

H. B. MEDLICOTT, Esq., F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the Surveyor General of India,—Account of the operations of the Great Trigonometrical Survey of India. Vol. V. Details of the Pendulum observations and of their Reduction. By Captain J. P. Basevi, and Captain H. J. Heaviside.

2. From Dr. R. Mitra,—Facsimiles of Inscriptions from the Great Temple of Puri.

3. From Dr. G. Leitner,—Proceedings of the Anjuman-i-Panjab in connexion with the proposed Bill for the appointment of persons to the office of Kazi.

4. From the Home, Revenue and Agricultural Department,—(1) Yajurveda Sanhita. (2) Scientific Results of the Second Yarkand Mission: Rhynchota. By W. L. Distant.

5. From the Superintendent, Marine Survey Department,—Charts of (1) Jaygad and Entrance to Shástri River, (2) Chaul and Entrance to Kundalika River, (3) Quilon Roads, and (4) Mullaitivu.

6. From the authors,—(1) Erläuternde Angaben über den IV Band der "Reisen in Indien und Hochasien" nebst Bericht über die landschaftlichen Aufnahmen und die Tafeln. By H. von Schlagintweit-Sakünlünski. (2) Account of the Incarnation of Govardhananatha. By Mohun Lall Vishnu Lall. (3) The Toungoo God-language conspiracy. By Mrs. Eleanor Mason.

The following gentlemen, duly proposed and seconded at the last Meeting, were balloted for and elected Ordinary Members—

W. Fiddian, Esq.

N. Elias, Esq.

Babu Bipina Chunder Rai.

Ananda Rámа Gajapati, the Raja of Vizianagram.

The following are candidates for ballot at the next meeting—

1. R. H. McLeod, Esq., C. S., Assistant Magistrate, Benares, proposed by H. Rivett-Carnac, Esq., seconded by P. C. Wheeler, Esq., C. S.

2. Rao Sahib Visvanath Narayana Mandalik, C. S. I., Bombay, proposed by Dr. R. Mitra, seconded by J. Crawfurd, Esq.

3. Babu Tara Prasad Chatterjea, proposed by Moulvie Abdul Latif Khan, Bahadoor, seconded by J. Crawfurd, Esq.

The SECRETARY reported that the Hon. C. D. Field, and Dr. V. Richards had intimated their desire to withdraw from the Society.

The SECRETARY submitted the following Estimate of Income and Expenditure for the year 1880.

INCOME.

Balance in hand.....Rs.	3,617	5	4
Subscriptions.....	7,000	0	0
Sale of Publications.....	1,600	0	0
Interest on Vested Funds.....	6,131	0	0
	18,348	5	4

EXPENDITURE.

Publications.....Rs.	7,000	0	0
Library.....	3,000	0	0
Book-Cases for Library.....	1,000	0	0
Establishment.....	4,200	0	0
Contingencies.....	1,200	0	0
Building and Furniture.....	600	0	0
Coins.....	200	0	0
Taxes.....	852	0	0
	18,052	0	0

The SECRETARY exhibited a metal celt forwarded for the inspection of the Society by Mr. H. Rivett-Carnac, and read a Memorandum by him on the same.

Mr. Rivett-Carnac says:

I submit herewith for the inspection of the Society what appears to be a metal Celt of the type well known in many collections in Europe.

The implement which was in all probability used as an axe-head or hatchet, is 5¾ inches long by 4 inches broad. The metal is apparently bronze, being too hard and heavy for copper.

It was found in the Hurdui District, Oudh, by Colonel Montague Procter who has been good enough to place it at my disposal.

A reference to the sketch which accompanies my paper on Prehistoric Remains in the Central Provinces will shew a similar implement of iron, with the bands by which the axe head was fastened to the shaft.

Dr. HOERNLE exhibited a number of Buddhist copper coins, and read a note on the same by H. Rivett-Carnac, Esq., C. S., C. I. E., F. S. A. They form a collection of 22 small coins, all belonging to Mr. Rivett-Carnac, and kindly sent by him for the inspection of the Society. Most of the coins are round; but a few are square. The obverse generally shows some animal (bull, elephant, or lion); the name of the king being inscribed above or below the figure. The reverse generally shows some Buddhist symbols. The names are not very distinct; but such as they are, they have been read by Mr. A. Carlleyle, as follow: *Vaisákha Deva* (2 square coins), *Kamuda Sena, Aja Varmma* or *Asha Varmma, Maphaba Varma, Maha Satama, Satya Mitra, Ayu Mitra, Suya Mitra, Jaya Mitra, Vijaya Mitra, Laranga* or *Larata* or *Lájasa, Súgáta Janapya.*

Mr. Rivett-Carnac's note with a Plate of the coins will be published in Part I of the Journal.

Dr. HOERNLE also exhibited 28 small copper coins of the Sunga Dynasty, and read a Memorandum on them by H. Rivett-Carnac, Esq., C. S., C. I. E., F. S. A. These coins also belong to Mr. Rivett-Carnac, they are mostly of the same type as those which were noticed in the Proceedings for January. The memorandum is principally occupied with a description of the monograms or devices of the different kings, exhibited on the reverses of the coins. On most coins the device is a standing figure on a platform, between two staffs surmounted by three cross-bars; the head surrounded by rays or flames. On others, however, the platform and the side-poles are wanting; on others again the figure is female.

Dr. Hoernle remarked that great credit was due to Mr. Rivett-Carnac for his success in collecting so many new or as yet little known coins. As to the device on the reverse of some of the Buddhist coins, which Mr. Rivett-Carnac supposed to represent the *triśúla*, it really was the Buddhist symbol *triratna* or "three jewels," on the two sides of which there seemed to be represented bodhi-trees. On two coins he could distinguish the figure of an elephant; on two others there was the cross-like symbol,

svastika. What Mr. Rivett-Carnac had supposed to be a pair of fishes, might possibly be a conventional mode of figuring the sacred *Buddhapada* or foot-prints of Buddha.

Mr. Rivett-Carnac's Memorandum will be published in Part I of the Journal.

The following papers were read—

1. *Note on an Inscription on an ancient Mosque in Koh Inám, Zillah Allahabad, sent by* A. M. MARKHAM, ESQ., C. S.—*By* MAJOR H. S. JARRETT.

An inscription on ruined Mosque in Koh In'ám, Pergunnah Kara, Zillah Allahábád, (a large village razed to the ground for rebellion in 1858,) sent by A. M. Markham, Esq., C. S., was shown by Dr. Hoernle who read the following note of Major H. S. Jarrett on it:

The inscription is as follows:

نباشد مسجد جامع منور بعهد شاه عادل هفت کشور
شه فیروز شاهشاه غازي بفر مانش بناء خیر قاضی
حسام الدین حسن صدر زمانه که فضلش گشت در عالم نشانه
بسلخ ماه رمضان گشت موجود زهجرت هفصد وهشتاد وشش بود
۷۸۶

(This) Glorious Jámi Masjid was built
In the reign of the just king of the Seven Regions of the World.
King Firúz king of kings the Champion;
By his command, the auspicious foundation of the Kázi.
Husámu'ddín Hasan, chief of the age*
Whose eminence is a beacon in the world,
Was completed on the last day of Ramadán†
It was in the year 786 of the Hijrah.

This was in the reign of Firúz Shah of the House of Tuglak.

I find a mention in the Tarikh i Firúz Sháhi (of Zia'uddín Bami) of a *Husámuddín Hasan* who was Finance Minister or Examiner of Accounts in the reign of Ghiasuddín Tughlak Sháh who assumed the crown in 721 A. H. (1321 A. D.) The Chief Kádhi during his reign and that of his son Muḥammad was Kamálu'ddin.

The Chief Kazi (Sadr Jahán or Sadr Zemána) in that of Firúz Shah, was Jalálu'ddin Kirmíni. There is no mention of a Husámu'ddin in his

* A title given to the Kádhiu'l Kuzzát or Chief Kázi.
† Monday, 15th November 1384.

reign—yet the inscription describes this person as a Kázi and the title Sadr Zemána confirms it. Probably one of the name succeeded Jalalu'ddín on that Kazi's death but there is no trace of this to be found in the works I have consulted.

2. *The use of Silver Films in Improved Instruments of the Camera Lucida class.—By* J. C. Douglas, Esq.

These instruments are divisible into two classes, *viz.*, that in which a reflected image of the object is seen while the tracing point is seen direct, and the other class in which the object or tracing point is seen by reflection, but the tracing point or object is seen by light transmitted through a plate which acts at the same time as a reflector. The forms in most common use are the camera lucida, and the steel disc or Soemmering's mirror of the first class; and the parallel plate or tinted glass reflector of the second class. There are other forms less common but each referable to one of the two classes described above. Instruments of the first class give a brilliant and well defined reflected image; but they are fatiguing to use, and some persons experience great difficulty in using them. Instruments on the other principle are far more easily used, they cause less fatigue, but the reflected image is not so brilliant. In the case of the plane glass reflector the definition cannot be so good, as both surfaces of the glass reflect and there are therefore two superimposed images which do not exactly coincide; the second reflection is, however, weakened by using tinted glass, and this colouring also serves to reduce the transmitted light which would otherwise flood out the weak reflected image.

What is required in an instrument of this kind is the brilliancy and clear definition of the camera lucida, combined with the simplicity and ease in use, and the cheapness, of the tinted plane glass reflector; with the facility when desired, for using two reflections in order that the reflected image may not be reversed. I believe these requirements are attainable by the use of silver films on glass.

Silver films are so highly reflective that two or more successive reflections may be used if desired; by transmitted light the colour of the film is suitable for tinting the glass. The thickness of the film may be regulated according to requirements, a thick film being used when reflection only is required, and a thinner one according to the ratio desired between the reflected and transmitted light. The reflective power of the thinnest film is greatly superior to that of glass. The silver film is applicable to most forms in use, and it may be used not only on plane but on curved surfaces, *e. g.*, a plano concave lens silvered on the plane side might be used by a short-sighted person instead of the common plane reflector used in sketching microscopic objects, a slight curvature of the 1st or 2nd reflecting sur-

face in the camera lucida might be used to render it unnecessary to employ a lens to equalize the sensibly different distances of the images of the object and plane of delineation. The cost of silver films on glass is very trifling, and if taken care of they last for years; a number might be made at intervals, or they might be supplied for a trifling sum by the opticians.

For many purposes the films might be deposited on thin glass and varnished or protected by glass, when they would be very durable and would bear handling. For some purposes the film might be thickened by electro deposition and removed from the glass. As the films are so cheap, a number of graduated thickness might be kept, and a suitable one selected in each case to adjust the relative brilliancies of the reflected and transmitted light; or the films might be applied as the dark glasses usually supplied with the camera lucida, but this seems less simple and convenient than the use of a thicker or thinner film as transmitting reflector. A silver surface may reflect upwards of 90°/₀ of the incident light, a total reflecting prism has been found to reflect only about 75°/₀ or less, the loss being due to reflection at the first surface and absorption; the superiority of the silver surface is evident, particularly when several successive reflections are required. Even if the highest attainable brilliancy be not generally required, still the higher this is, the greater the range of adjustment without alteration of the source of light. The strictest regularity in the film not being essential, suitable films are very readily obtained. With strict cleanliness, pure chemicals, care that the glass is wetted equally in every part by water or alcohol at the moment of immersion in the silvering solution, and care that the solution is properly mixed, *i. e.*, homogeneous, success is readily attained.

I find* that 'Professor Govi of Rome has devised' a form of camera lucida in which a metallic film is used. He simply gilds the reflecting surface of the camera lucida prism with a thin film of gold, and cements to this surface with canada balsam another similar prism; M. Nachet has adopted this improvement in the construction of various forms of camera lucida. The greater advantage of the silver film are obvious. By the use of silvered glass, instruments of various forms and of large size may be readily constructed for a trifling sum by any ingenious person; thus an instrument may be devised and readily constructed for any special purpose. The following is a description of the instruments exhibited at the meeting:

1. An ordinary tinted glass reflector for use with the microscope. The tinted glass usually used was replaced by a piece of glass covered with a thin film of silver. The silvered side is turned towards the eye-piece and

* Annual Record of Science and Industry, 1875, p. 144.

reflects the magnified image. In this form several reflectors differing in the thickness of the silver film should be available for regulating the ratio between the transmitted and reflected light, but a certain thickness of film will be found which is applicable to most purposes so that change of reflector is seldom necessary.

2. Camera lucida with double reflection, Plate I, figure 1. The first reflection is from a thick film of silver, the second is from a thinner film. The thickness of the second film may be adjusted as described above. It will be seen that the plane of delineation is seen *through* the second reflector, not past it as in the ordinary instrument. In the diagrams the thick oblique lines are the silver films, the thin lines the directions of the light, the arrows the objects and the dotted line the paper on which the objects are to be drawn.

3. A form of reflecting camera for sketching microscopic objects, Plate I, figure 2. This instrument being fitted to the eye-piece of the microscope, the paper and pencil point under the larger reflector appear in the field of the microscope. The object is seen direct. The second mirror in the instrument exhibited was an inch square. This instrument may be used with the body of the microscope at any angle, it being merely necessary to place the drawing paper in a plane parallel with that of the microscope stage. In the figures 2 and 3 the mirrors are represented as parallel, they should usually be slightly inclined to each other to increase distance between plane of delineation and the object.

4. Another reflecting camera for sketching small objects is represented in Plate I, figure 3. In the instrument exhibited the larger reflector was $1\frac{1}{2}'' \times 1\frac{1}{4}''$ and placed $10''$ from the paper, the field was about $4\frac{1}{2}$ inches square. This instrument may be used horizontal or inclined, and it is admirably adapted for drawing such objects as insects, leaves, shells, &c. If the vertical distances between the mirrors and the object and paper respectively be constant in instruments of this form, the relative magnitudes of object and drawing will obviously vary with the distance between the reflectors. It is evident that by the use of reflectors in instruments of this class, the reflecting surfaces may be larger and the distance between them greater than if a prism were used.

The above are only examples of the application of silver films to a particular class of instrument, it is evident they offer great facility for giving this class of instrument its maximum development. It is obvious also that silver films are applicable with advantage in many other cases where prisms are used at present, particularly where it is desired to divide a beam of light into two; *e. g.*, if figure 3 be turned upside down, and the two eyes of the observer be in the place of the arrow and the dotted line, the diagram represents an arrangement suitable for a

non-stereoscopic binocular microscope, the inclination between the mirrors being varied to suit the distance between the eyes; the loss of light in such an arrangement would be very little, and the brilliancy of the two images might be rendered very nearly equal.

To illustrate how cheaply such instruments may be made the mirrors in the instruments exhibited were mounted in tubes of thin sheet zinc which is readily cut with ordinary scissors and bent into shape with pliers; a coat of asphalt varnish used for making shallow cells was applied for the sake of appearance. The instrument, figure 2, was fastened to the eye-piece by a piece of zinc bent half round the eye-piece tube and held against it by a small elastic rubber band. The tinted reflector was supported by a bent plate of zinc hung on the milled edge of the eye-piece by a groove passing almost half round the eye-piece; this is a most convenient method of attaching the reflector or camera to the eye-piece, as it is quite firm enough and yet removable in an instant without disturbing the microscope.

3. *Transcripts and Translations of two Inscriptions from Buddha-Gayá.*—*By* DR. RÁJENDRALÁLA MITRA, C. I. E.

Dr Mitra stated that during his last stay at Buddha-Gayá he tried much to obtain copies of all the inscriptions that could be had there, but, owing to various causes, a few escaped him. Two of these had been lately placed at his disposal by General Cunningham. They were not of any very early age, nor connected with the history of the great temple at the place; but both of them were dated, and of interest. The larger of the two records measures 19 × 12 inches, and comprises 17 lines of writing, parts of which have been obliterated. The small one is limited to 7 × 6 inches, and contains 8 lines of Sanskrit. The character used is in both the same, the Kuṭila, but of different periods.

The language of the large record is high-flown, and very much involved. Metaphors and similes are scattered in it with no niggard hand, and they are mostly very much over-strained, and difficult of reproduction in plain English.

The purport of the monument is the commemoration of the excavation of a cave (Guhá), the dedication of the images of the "three jewels" of Buddhism, and the performance of a sacrifice in a courtyard. The epithets used to describe the three jewels are, as far as the words are concerned, easy enough, but it is difficult to make out their bearings. The word used for the sacrifice is *Satra*, which is a Vedic rite, which no Buddhist would celebrate. Probably the word has been used in a restricted sense to imply some Buddhist ceremonial the nature of which is not known. The courtyard is not properly defined; it may mean the area before the cave, or that in front of the Great Temple before the Bodhi tree—probably the former.

The author of the pious deeds was a hermit of the name Jayachchandra, who was the spiritual guide of the king of Káší, and a disciple of a saint named S'rímitra, whose eulogy fills more than one half of the record. All the pious deeds were performed on the same day, *i. e.,* on Saturday, the 5th of the wane, in the month of Jyaishṭha, in the year of Vikramánka 124? The date is given in words of which the fourth has been obliterated. The first three are clear enough, and the fourth must have been a word of two syllables implying a figure from 1 to 9. This carries the record to the last decade of the 12th century. A Káyastha, of the name of Manoratha, composed the record; one Purandara transcribed it, and Dhárádhara engraved it.

The second record was inscribed on the 18th year of the reign of Dharmapála, who was the 2nd of the Pála dynasty of Bengal. According to Dr. Mitra's calculation he must have begun his reign on or about 875, and the record must, therefore, belong to the last decade of the 9th century. It commemorates the consecration of a four-faced Mahádeva, and the excavation of a tank by one S'aka, son of a sculptor, at a cost of three thousand Drummas.

The two records are separated by an interval of about three centuries, and the earlier of them shows that Hinduism was flourishing at the time at Buddha Gayá, and the later one proves that Buddhism had not lost all influence there at the close of the 12th century, and that the excavation of Buddhist caves had not ceased, as supposed by some, between 650 and 675 A. D., the uncertainty, instead of ranging within the narrow range of 25 years, extends to over five centuries. It, likewise, shows that in that century the current coin of the place was called drumma, the Sanskrit form of the Greek Drachma. Mention of this money has been met with in other records. The drumma appears to be a sequel to the currency of the dinar mentioned in an inscription on the Sánchi gateway.

Transcript in Devanágari of Inscription No. 1.

१ । ॐ नमो बुद्धाय ॥ उद्भूतः स्मेरभावः प्रविकचरुचिरश्रीविशालद्विजालीबालेन्दूद्यच्छ-
द्युच्छुरितविततिपदे नोदयद्भिः समन्तात् । अन्तस्संदष्टशुद्धप्रव-

२ । रगुरुगुणग्रामधामप्ररोहैः संबद्धो भूतिहेतुस्त्रिजगदुदयनस्सम्भ्रमाप्तः श्रिये वः ॥ (१)
यस्यान्तःस्फुरदुज्ज्वलोज्ज्वलजगद्बोधप्रचन्द्रोदयज्योत्स्नाजाल-

३ । विजृम्भितैरिव शरच्चन्द्रप्रभस्य प्रभाः । भाति प्रस्फुटपाटलामलनखश्रेणिच्छविच्छद्मना
…गः कोपि कृपात्मको दिशतु वः श्रेयस्स लोकेश्व-
…: ॥ (२) अथालम्बितसर्व्वसत्त्वविषयव्यासङ्गमैत्रीमयस्फारोत्कर्षविशेषकल्पितशिति-
…ग्रातिःपताकामिव । विश्वव्यापिकृपाकृपाणमभितः

४ …ीनिर्म्मितं बिभ्रतो देयाद्देकजटापटूत्कटजगद्दुःखाभ्रमभ्युन्नतिम् ॥ (३) अस्ति त्रिलो-
…ीषु कृतप्रसूतः मनोज्ञनामा स्मितसर्व्वभूतः । सम्यग्दमिताम्बयधी-

६। रभूतः श्रीमित्रनामा परमोपभूतः ॥ (४) हिंसाहिंसाकशेषाः क्रुधमधिकरुषस्खल-
वत्तासमाशु व्याधयो + म्पद्गन्तः प्रणयपरतया विश्वविश्वासभू-
७। मेः। चेतःसंप्रीयमाणा मधुरतरदशोः श्रेयपीयूषपातैर्सिर्व्यं वः स्तू (६) कथन्ति च्युतमल-
पटलं यस्य मैत्रीषु चित्तम् ॥ (५) सिद्धोरष्टविस्फुटकटपटलापटच-
८। मभ्युद्गताः स्वेनोपेत्य पतिं रता गुणगणव्यासङ्गिनी रङ्गिनीः। यथाद्वैतमना मनागिव
हस्रः प्रान्तेन पादान्तगा जीवन्मुक्तिवधूविला-
९। सरसिकः सार्व्वज्ञमालोकते ॥ (६) वीतस्पृहोपि कृपया जगदुद्दिधीर्षुः सम्बुद्धकृत्यपरमः
परमोपदश्चा। पृथ्वीपतीनपरनिष्ठमतीन् विनीय यः श्रीध-
१०। मार्च्चमचणानचिरेण चक्रे ॥ (७) स्पृष्टं न यद्द्याचकचेतसापि नित्यन्तदप्याशु
दिशत्यसङ्गम्। चिन्तामणिश्चिन्तितदानचन्द्रो यस्मिन्नवाप चपयेव च दा-
११। म् ॥ (८) स्वार्यं स्वायमशेषनिर्जरसरित्स्रोतःस्वपज्जन्मनः सम्यग्रत्नपदस्पृशोपि
वक्रमः श्रीहरिभाजीश्वरम्। शेषेणापि तुलामुपेत्य कृतिनः प्रथ-
१२। मानुद्यतनोः कीर्त्तिरद्भुतमुद्भवत् त्रिभुवने धावल्यमाकल्पशः ॥ (९) उदिततकलभूमीम-
ण्डलैश्वर्य्यसिद्धिः स्वयमपि किमपीच्छन्नच्छधीयस्य शिष्यः। स्वभ-
१३। यदभवभाजः श्रद्धया बन्धुरात्मा च्युपशतकृतसेवः श्रीजयचन्द्रदेवः ॥ (१०) श्रीमन्म-
हाबोधिपदस्य शासप्रासादिकं मग्नमशेषमेव। काशीमदीयागुरु-
१४। रुद्धार यः शासनं शासनकर्णधारः ॥ (११) सम्बद्धमान्ध्यपाथोद्‌कान्तकौसुम्भवासमं।
वन्द्यमानां दिवा मूर्द्धि दन्तताराङ्कुरोत्कराम् ॥ (१२) उग्रतारां धुरान्तर सिंघ-
१५। + + पुरस्सरीम्। श्रीमज्जयपुरे बोधीमच चैतां कृतो गुणाम् (१३) सचाणि
तिष्ठणां चासामङ्गनेषु निरङ्गणः। सोयं श्रीमज्जगन्मित्रः शास्वतीकृत्य. + ॥ (१४)
१६। + + वेदनयनेन्दुनिष्ठया**संख्ययाङ्कपरिपाटिलचिते। विक्रमाङ्कनरनाथवत्सरे
ज्यैष्ठमासि युगपद्धृदीधयत् ॥ (१५) कायस्थवंशहंसश्रीसीदसुतो मनोरथः
१७। + +। अकृत प्रशस्तिमेतां गुणिगणचरणाम्बुजभ्रमरः ॥ (१६) चखिलखिलता-
मर्म्मज्ञः श्रीमानेतां पुरन्दरः। टङ्कैरुदकिरद्धीरः शिल्पी धाराधराभिधः ॥ (१७)

Translation of the above.

Om ! salutation to Buddha.

1. May he, who is of smiling nature, who is of delightfully expanded beauty, who is endowed with the radiance of the sprouts of his internal, thriving, noble and mighty mass of merits, made manifest by the light of the young moons of the large rows of his teeth, who, for the sake of glory, has relieved the three spheres of all illness by bestowing on the the S'ástra—may he be to your welfare.

2. May that lord of regions, the lord, the autumnal moon-li of whose heart is manifest by the resplendence of the glorious light the world-enlightening moon of knowledge, whose benevolent mind a pears

lustrous under the guise of the resplendent row of his pure, rose-coloured nails—may he grant you blessings.

3. May he, of the one lock of matted hair, whose mind is engaged in friendship for those who depend on him, who holds up, like a standard, the white light of noble speech, who wields the beautiful scymitar of all-pervading mercy which has made the world fearless—may he promote your prosperity.

4. Here lived a noble hermit of the name of S'rímitra, the chief of the pure race of Sambuddha, renowned in the three worlds, who had imparted to all beings the secret knowledge (lit. the Mantra) of the noblest sacrifice,

5. by whose friendly aid the ferocious, giving up their needless ferocity, the passionate forsaking their superabundant anger, the timid abandoning their fear.———Relying on the friendship of him who is the asylum of radiance in this world, even (wild) animals, endowing themselves with love, conversed with each other with affection, diffusing the nectar of their delightful eyes. What a wonder!

6. Enamoured by the maiden of emancipation in this life, that person of undeviating mind, did not by the corner of his eyes, cast even a reproachful glance at the eight Siddhís, who had achieved the exclusion of all created evils, who were devoted voluntarily to their husband, who delighted in the enjoyment of good qualities, and who lying at his feet.———

7. Although devoid of all desires, he, thoroughly versed in all the works of Buddha, and, always looking up for high enterprise, through his benevolence, was anxious for the salvation of the creation. He, by his teachings, made heterodox kings to betake to the worship of S'ríghana, (Buddha).

8. He always bestowed freely even what did not cross the mind of beggars; beholding which (the jewel) Chintámaṇi, the greatest giver of gifts, through shame hid itself in heaven.

9. The work of him who, bathing over and over in the river of endless felicity, had, from the day of his birth, taken the lord proprietor of ———nd propriety for asylum, who,———having repeatedly touched the ———of the highest Brahma, had ultimately become unrivalled among *Pr*, and of thriving person;———his works had attained a wonderful Münche for ages.

We S'rí Jayachchandra Deva, the adored of a hundred kings, the b——xt from devotion, the perfection of whose glory had spread all over t——thly globe, wishing something, became a disciple of one whose know——as transparent, and who had renounced the earth.

Paris.

11. He, becoming the spiritual guide of the king of Kási, and the instructor of law, revived the lost ordinances and the endless scriptures of the Mahábodhi.

12. The three Bodhis———adorned in golden raiment, resplendent as the garlanded cloud of twilight———the adored of day with the forehead decked with a bright star.

13. Bearing a refulgent star———this cave, in the auspicious Jayapura,

14, 15. as also three sacrifices (satras) in the courtyard, the wifeless, and of noble deeds. With reference to the three,—the friend of the world with firm faith at once accomplished in the fortunate year comprising the numbers—the Vedas, (4) the eyes, (2) the moon, (1) (and)———(?) of the era of the Lord of men, Vikramánka, in the month of Jyaishṭha.

16. Manoratha, son of S'rísída, of the noblest of the Káyastha race, a bee on the lotus feet of the learned, composed this eulogium.

17. Purandara, the adored of scribes, transcribed this, and the clever artist, named Dhárádhara, engraved it with his chisel.

Transcript in Devanágarí of Inscription No. 2.

१। तद्दम्य (१) + मायनभरस्य उज्ज्वलस्य शिलाभिदः ॥ +
२। शकाब्देन पुचेण महादेवचतुर्मुखः ॥ श्रेष्ठ +
३। म + + म + + महाबोधिनिवासिनां ॥ स्नातक +
४। + ऋचयासु श्रेयसे प्रतिष्ठापितः पुष्करि-
५। ण्यत्य(च) + या च पूता विष्णुपदीसमा ॥ वितये-
६। न सहस्रेण द्रम्माणां खानिता + ता ॥
७। षड्विंशतितमे वर्षे धर्म्मपाले महीभुजि
८। भाद्रवञ्जलपक्षस्यां स्नूनेर्भौस्क-
९। रस्याह्नि ॥

Translation.

For endless virtue and for the good of the inhabitants of Mahábodhi, an image of the four-mouthed Mahádeva was consecrated by S'aka[illegible] of the noble sculptor, ——sáyanabhara. (?) A tank, holy river, born of the feet of Vishṇu, was also excavated by him at a three thousand Drummas, on the 26th year of the great king Dha on the 5th of the wane, on the day of the son of the lord (Saturday).

4. *Description of a new Lepidopterous Insect belonging to the ge Apatura.*—*By* L. de NICE'VILLE, ESQ.

This paper will appear in Part II of the Journal.

Library.

The following additions have been made to the Library since the Meeting held in March last.

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Goss, H.—Introductory Papers on Fossil Entomology, No. 11. *Distant, W. L.*—Notes on some *Exotic Hemiptera*, with descriptions of new species. *McLachlan, R.*—On *Calopterygina* from the Island of Sumatra, collected by Herr Carl Bock.

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New Haven. The American Journal of Science,—Vol. XIX, No. 109, January 1880.

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR MAY, 1880.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 5th instant, at 9·15 P. M.

H. B. MEDLICOTT, ESQ., F. R. S., President in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the Director, Cambridge Observatory,—Astronomical observations made at the Observatory of Cambridge under the superintendence of J. C. Adams, F. R. S., Vol. XXI, for the years 1861-65.

2. From the Royal Society of New South Wales,—(1) Report of the Council of Education, New South Wales, for 1878, (2) Annual Report of the Department of Mines, New South Wales, for 1877.

3. From the British Museum,—(1) Catalogue of the Oriental Coins in the British Museum; by S. L. Poole, (2) Illustrations of Typical specimens of *Lepidoptera Heterocera* in the collection of the British Museum, Part III, by A. G. Butler, (3) Illustrations of Typical specimens of *Coleoptera* in the British Museum, Part I, by C. O. Waterhouse.

4. From the authors :—

(1) Introduction to the Study of Sign Language among the North American Indians: by Lieut.-Col. G. Mallery, (2) Sacred Books of the East, Vols. I—III: edited by F. Max Müller, (3) Le dixseptième Chapitre du Bharatîya-Nâṭya-Çâstra, intitulé Vag-Abhinaya: by P. Regnaud, (4) Miscellaneous Essays relating to Indian subjects: by B. H. Hodgson, (5) Instructions for Testing Telegraph Lines and the Technical arrangement of offices, Vol. II: by L. Schwendler.

5. From the Maharaja of Kashmir,—a Hindee Almanac.

6. From Lieut. R. C. Temple,—4 silver and 29 copper coins.

7. From the Home, Revenue and Agricultural Department, (1) Ostindische Kaste in der Gegenwart: by Dr. E. Schlagintweit, (2) The Chronology of Ancient Nations: translated by Dr. C. E. Sachau.

The PRESIDENT then laid on the table Volume II of the Antiquities of Orissa, by Dr. Rájendralála Mitra, which had been recently presented to the Society by the author, and in calling attention to this valuable contribution to the Society's Library, he said:

I have the pleasure of presenting a gift in which the Society may take pride as well as interest. It is the second Volume of the Antiquities of Orissa by Dr. Rájendralála Mitra. For five and thirty years Dr. Mitra has, I may say, belonged to the Society. It was to him as a school before he made himself a master in the studies to which he has devoted his life. Although this work has been brought out quite independently of the Society, we may truly say that but for the Society, it would never have appeared. I am not competent to judge of the critical merits of a work of antiquarian research—no doubt this volume will sustain in this respect the reputation of its author—but of its form, I may venture to remark, that it seems worthy of the important object undertaken, to make an adequate permanent record of the wonderful monuments of a bygone attempt at civilization in this country. For such investigation it is especially to be regretted that so few of Dr. Mitra's fellow countrymen have endeavoured to emulate the conspicuous example he has set them, for it is surely to be presumed that, with equal learning, a native must have a great advantage over a foreigner in interpreting the symbols of a mythology and of a social phase, the traditions and the residual customs of which formed the elements of his earliest training. The Society can scarcely show a higher sense of the duties of its position than by the encouragement of native learning.

The following Gentlemen, duly proposed and seconded at the last Meeting, were balloted for and elected Ordinary Members—

R. H. MacLeod, Esq., C. S.
Rao Sahib Visvanáth Mandalik, C. S. I.
Babu Taraprasad Chatterjea.

The following Gentlemen are candidates for ballot at the next Meeting—

1. The Rev. J. S. Doxey, Multan, proposed by Col. C. C. Minchin, seconded by J. Crawfurd, Esq.

2. G. MacDonald, Esq., C. E., Aligarh, proposed by H. Rivett-Carnac Esq., seconded by A. Pedler, Esq.

3. J. G. W. Sykes, Esq., LL. D., Barrister at Law, Lukhnau, proposed by H. Rivett-Carnac, Esq., seconded by A. Pedler, Esq.

4. The Giridhararaj of Biswan, proposed by Dr. Rájendralála Mitra, seconded by J. Crawfurd, Esq.

The SECRETARY reported that Mr. J. C. MacDonald and Col. H. A. Browne had intimated their desire to withdraw from the Society.

The PRESIDENT announced that the Council propose certain amendments to Rules 4 and 46:

The object of these amendments will be seen from the following circular which was issued to all resident members in compliance with Rule 64 A.

Proposition to increase the strength of the Council.

The peculiar circumstances in which the Society is placed make it very desirable, or even necessary to working efficiency, to increase the strength of the Council.

There are always attached to the Supreme and the Local Governments men whose counsel it is important to secure. With the present limit of the number of the Council to 15 members this advantage cannot be attained, owing to the removal of all the chief offices to the hills during the hot season, whereby the administrative body of the Society would then be left inefficient for the greater part of the year. This difficulty has for some time been partially met by making frequent changes in the Council within the year, but it is not always possible to effect a move of this kind, and the practice is independently objectionable.

The law requiring that the Trustees of the Indian Museum appointed by the Society shall be members of the Council has added greatly to the difficulty under consideration: these four Trustees (or five, when the President is already a Trustee) should be working (and some, at least, non-migratory) members of Council; and the office-bearers of the Society (the 3 Secretaries) are not always those who can most fitly be nominated as Trustees.

The rule whereby the President must be chosen from the Council has sometimes been felt obstructively; and, indeed, the object of such a rule is not apparent. This difficulty also would be neutralized if the Council had power to nominate some additional members to its body.

The appointment of these additional members should remain optional, the special object being—to have power in emergent cases to bring in some particular individual without requiring the immediate retirement of some actual member of Council; but the member so appointed would be as fully and permanently on the Council as any other. The desired relief could not be secured by a less number than five.

The change will require the following alterations of the Rules, (additions in italics):

Council and officers of the Society.

Rule 4. "The administration, direction and management of the affairs of the Society shall be entrusted to a Council composed of the officers of the Society—namely, a President, three Vice-Presidents, and one or more Secretaries, including the Treasurer—with as many other ordinary members, as shall with these officers make up a *minimum* total of fifteen, *or a maximum of twenty.*"

"Not more than one of the offices of President, Vice-President or Secretary, shall be held by the same individual; but the Secretary if there be one, or one of the Secretaries, if there be more than one, shall ex-officio act as Treasurer. *The optional vacancies in the Council are intended to provide (under Rule 46) for emergent cases, such as are occasioned by the frequent temporary absence of members, or otherwise.*"

Rules 46. "In the event of a vacancy occurring during the year in the office of President, Vice-President, Secretary, or Member of Council, it shall be competent to the remaining Members of the Council to fill up such vacancy, subject to the confirmation of the next subsequent Ordinary General Meeting.

Filling of vacancies in the Council.

"The Council may also, for specified reasons and subject to the same confirmation, elect additional members, as occasion may require, within the sanctioned maximum number."

The PRESIDENT invited the members present to make any remarks or suggestions on the proposed alterations, reminding them that under the rules a statement of such objections would have to accompany the voting papers, which would be sent round to all members of the Society.

No remarks or suggestions having been made on the proposals, the President stated that the proposals would be circulated, and the questions would come up again at the July meeting.

The PRESIDENT on behalf of the Council then announced that Mr. A. Pedler had been appointed General Secretary, Member of Council and Trustee of the Indian Museum, on behalf of the Society, in the place of Mr. J. Crawfurd who had gone to England.

The PRESIDENT also announced that Mr. H. F. Blanford had tendered his resignation as Member of the Council, and Mr. Beverley as Treasurer, and that Mr. J. C. Douglas had been appointed Member of Council and Treasurer in their place.

The SECRETARY announced that the following works had been sanctioned for publication in the Bibliotheca Indica Series:

1. Chaṇḍa's Prákrit Grammar; edited by Dr. A. F. R. Hoernle.
2. Second Volume (English Translation) of the Ain-i-Akbari; by Captain H. W. Clarke.
3. Maghází el Wáqidí; edited by Mr. C. J. Lyall.
4. Maitráyaṇi Samhitá; edited by Dr. L. Schroeder.
5. English translation of the Kathá Sarit Ságara, by Mr. C. H. Tawney.
6. Vishṇu Sútra; edited by Prof. Jolly.
7. English Translation of the Charaka; by Dr. Mahendralála Sircar.
8. Kaṭhaka Grihya Sútra; edited by Dr. G. Thibaut.
9. English Translation of the Tarikh-ul-Khulfa; by Major H. S. Jarrett.
10. Nirukta, with commentary; by Pandit Satyavrata Samásrami.
11. Third volume of the Akbar Namah; edited by Maulvi Abdurrahim.
12. Continuation of the Iṣabah; edited by Maulvi Abdul Hai.

Dr. A. F. R Hoernle exhibited four silver, and twenty-nine copper coins, and some ornaments received from Lieut. R. C. Temple, and read the following note on them by Dr. Rájendralála Mitra.

"Two of the silver coins have been so worn out that the legends on them have become illegible. The 3rd is a coin of Ala-uddin Muhammad Shah A. H. 695 to 715. It has been figured by Thomas in his Pathan coins of Delhi, Plate III, fig. 57, page 171. The legend on the fourth is very faint, and I doubtfully take it to be of the same reign but of different type.

"The copper coins are all of the same reign and type, but not of the same date. On some I make out the date to be A. H. 896, in others 905, 914, 917 and 918. They belong to the reign of Sikandar Shah Behlol (Behlodi, Lodi,) and have been figured by Thomas, plate V, figs. 167 and 169, page 366.

"The large ornament is a necklet of a pattern common all over India. The small ones are earrings. They are of no interest except that the like of them may be seen in figures of ancient and mediæval ornaments of the kind."

Dr. A. F. R. Hoernle read the following Memorandum from Mr. H. Rivett-Carnac, C. S., C. I. E., F. S. A., giving extracts from a letter from Chevalier Hans Hildebrandt, regarding the resemblance between the Swedish Remains and the Indian Pre-historic Tumuli and Markings.

"The following extracts from a letter from the Chevalier Hans Hildebrandt, Antiquary to the kingdom of Sweden, Director of the Royal Swedish Academy of History and Antiquities, in which he notices the resemblance between the Swedish Remains, and the Indian Prehistoric Tumuli and Markings described in the papers read by me before the Asiatic Society will perhaps be of interest. Referring to the cup-marks, M. Hildebrandt writes:

"'The ancient sculpturings on the Indian rocks are highly interesting. Regarded as a whole they are more like to the Scotch sculpturings than to the Swedish ones, as you will see from the enclosed plate, showing some very characteristic groups of the Swedish type.

"'The cup-marks occur in Sweden very oft, but seldom or never on slanting surfaces, never, as far as I know, on natural rocks, generally on the uppermost horizontal or quasi-horizontal surface of large or smaller blocks, In one of the volumes of the monthly papers of our academy, which I sent you to-day, you will find such a block with a certain number of cup-marks figured. The cup-bearing blocks are called by the Swedish peasants elfstenor or stones of the elfies. The cups are used as receptacles of offerings. They are greased and in them are deposited small gifts to the supernatural

beings, such as pins, farthings, &c. This custom is in some places retained even to-day. Count G. Essen, who died some years ago, had placed in his park, where only the families of his estate entered, an Elfstone, and after a week he found several deposits in the cups. He took them away, but after another week the cups were rich in small objects. No friend of superstition, he told his labourers that they were not allowed to deposit offerings on the stone. The labourers obeyed but reluctantly. They were persuaded, that the Count had taken the stone from the field and placed it in his park only to have a place of offering continually at hand, and his prohibition to use it was regarded as a proof that he wished to use the said stone only for himself.

"'The monoliths are very common in Sweden, but generally very rough. I know only a single instance, where the stone shows a kind of ornament (a spiral line) in the province of Halland.

"'Elf cups are often found in Sweden on the covering blocks of our dolmens. The dolmens belong in Sweden exclusively to the Stone-age, but I am not quite sure if the cup-marks on them can be ascribed to so high an antiquity. The cup-bearing blocks could be visible in other prehistoric periods as they are to-day, and in that way they do not necessarily belong to the times of erection of the dolmen itself,"

"It is to be noticed that in some parts of India also flowers and offerings are to be found on the sculptured stones and at Junapanee as in Sweden the cup-marks were as in Sweden generally on the "uppermost horizontal or quasi-horizontal surface of the large or smaller blocks." In India the rocks with the markings are attributed to the *Pandus*, who although hardly to be regarded as elfs, represent in the minds of the people a supernatural agency.

"Referring to the Tumuli M. Hildebrandt writes:

"'The likenesses between your Indian Tumuli and our Swedish ones are of so general a kind, you will find the same arrangement everywhere, that I fear no conclusions are thence to be drawn. But your finds are of the highest interest. Your iron axes have exactly the same type as the very fine metal axes of Europe, the only type seasonable in the age, when man learned to have recourse to metal instead of stone for making an axe. I think we have two ways of explaining this phenomenon. Either your Indian iron-implements have no connection at all with the development of European civilisation, and then they are to be regarded as belonging to a quite distinct civilisation, which, quite independently left the stage of the stone-implements and made itself new ones of metal, of iron, which, to be sure in some regions, for instance in South Africa, has been known and used earlier than copper and bronze. Or your Indian finds belong to the same great wave of civilization we have in Europe, but in India iron was known

very early; already in the very first period of the knowledge of metals, copper or bronze was given up and replaced with iron, a very interesting fact. To choose between the two theories it will be necessary to have the exact date of these finds, and to that end it will be necessary to have some researches more in the same direction.' "

"It is impossible at present to give even approximately the date of the Tumuli—all the people can tell you is that they are prehistoric.

"The following extract regarding the remains of snake-worship in Sweden will be considered interesting:

" 'There is still in Sweden to be found a snake-worship in a tame way. We have in Sweden a quite innocent snake, Swed-Snok (the same word as in English!) which lives in heaps of stones, in the foundations of country-houses &c., and is regarded as a tutelary genius of the house. As a boy I killed a *snok* and was very proud of my bravery, till my old grandmother heard of it and made me so angry reproaches that I promised never to do so any more. In Pompeii you will find almost in every house the tutelary snakes painted, especially in the kitchens.' "

The Rev. Father E. Lafont, S. J. read the following note on some anomalies he had observed in one of Crookes' Electrical Radiometers, and exhibited to the members the difference in behaviour of this instrument, and that of the ordinary form of electrical radiometer.

An Electrical Radiometer recently made for me by Mr. C. H. Gimingham the Assistant of Mr. W. Crookes, behaves in a manner so different from that mentioned in the latter's Lecture "On Radiant Matter," that I thought it might interest the meeting to have it exhibited to-night.

According to Crookes, the vanes of his Radiometer revolve when made the negative pole of the Inductorium, but remain perfectly motionless when the current is reversed, and when the vanes become positive. Now in this particular instrument with a weak primary current, the phenomena take place just as they were exhibited at Sheffield, but if more battery power be added, it becomes impossible to prevent the rotation by reversing the current, in both positions of the commutator the luminous appearances and the rotatory movement remain unaltered, except perhaps in intensity.

The explanation of this anomaly is, I think, the following:

We have in the Secondary Coil of our Inductorium, a rapid succession of two induced currents produced by the *closing* and the *opening* of the primary or battery current; but of these two induced currents, that produced at opening is far stronger than the one produced at the closing of the primary. It follows from this, that if a great resistance be interposed between the terminals of the Secondary Coil, the stronger current alone passes, and it is from this that these terminals are usually called *positive* or

negative. In the present case an additional battery power very likely so far increases the tension of the weaker current that on reversing the commutator, that current plays the part which usually devolves upon the stronger current alone. The vanes of the Radiometer contain always *negative* electricity, in one position of the commutator from the *direct*, and in the other position from the *inverse* induced current, and when that *negative* electricity has sufficient tension it drives the vanes in both cases. This new fact proves once more the comparative indifference of positive, and the peculiar energy of negative electricity in these highly rarified tubes.

The following papers were read—

Second Notice of the Coins of the Mitras.—By A. C. Carlleyle, Esq. *Archæological Survey of India.*

(Abstract.)

This paper mainly treats of a new device discovered by the author on some of the Mitra coins, acquired by Mr. Rivett-Carnac on a subsequent occasion, and noticed by him in a paper read at the last meeting of the Society (see Proceedings for April). This device is the recumbent figure of a man, which takes the place of the three symbols on the other coins. The author identifies it as Buddha in his nirvána, in the same recumbent posture as represented by the colossal statue of the nirvána, discovered by him on the site of Kusinagara. The paper further shows that all Mitra coins may be divided into three classes, according to their devices on the reverse. The first class has a bull standing; the second, a peacock and palm-tree; the third, a chaitya or stúpa of three semicircular arches. The two latter classes again, show the standing bull on their obverse, while the first class has the Buddhist triśúla in its place. The author states that 14 kings of the Mitra dynasty are now known, whose dates he says range from B. C. 178 to A. D. 144.

This paper will be printed in the Journal, Part I.

2. *On a simple Method of identifying a submerged Telegraph Cable without cutting it.—By* W. P. Johnston, Esq., *Officiating Electrician, Indian Government Telegraphs.*

(Abstract.)

This paper refers to a simple and very ingenious method for identifying any submerged telegraph cable without making the highly objectionable cut, when the cable has been raised to a boat. For instance, say that there are two identical cables laid across a river, one of which has become faulty, how can the faulty one be distinguished without cutting either cable? Mr. Johnston uses for this purpose a telephone which, as is well

known, is the most sensitive instrument at present available for indicating small currents acting for very short intervals of time. After having given orders on shore that signals are to be sent, only through the good cable, Mr. Johnston attaches a telephone to the wire guards of the raised cable, the distance between the two connecting points being not necessarily greater than 6 feet; if then it should happen that the cable, to which the telephone is attached, is the one through the copper conductor of which signals are being sent, and into the wire guards of which small and opposite currents are consequently induced, and of which currents small portions pass through the shunt formed by the telephone, then every signal sent through the cable can be distinctly read, and the Telegraph Engineer on board knows that he has got hold of the good cable. If no signals can be heard in the telephone, then it is the faulty cable that has been raised to the boat.

The reverse way may also be chosen, by connecting a telephone to the conductor of the cable on shore, and sending signals from a battery on the boat, through the wire guards; in this manner the Telegraph Engineer on the boat has the means of communicating with the shore.

After the paper was read Mr. Louis Schwendler gave a lucid description of this ingenious method for applying the telephone to practical purposes, illustrating his remarks by diagrams on the black board, and carrying out some experiments with a piece of cable as used for Indian rivers. The members present satisfied themselves as to the efficiency of the method, and two signallers of the Government Telegraph Department communicated with each other in the manner above described.

Mr. Schwendler further said that the telephone, although a very interesting instrument and of great practical importance for physical research, appeared to him a most dangerous one from a telegraph point of view, for it could be used for taking off at any point, the messages passing along a line of telegraph, and it could not be detected by the ordinary means of testing. He said it was well known that during the cotton crisis in Bombay, certain people interested in cotton messages, had started an intermediate office in the jungle, by which means they carried off the messages and falsified them; but that if a case of this sort happened now, it would be at once detected by the nearest testing office, whereas by the application of a telephone, acting as a shunt between any two points of a telegraph wire, no such detection would be possible.

The paper will be published in the Journal, Part II.

The following communications have been received:—

On some Points in the Dentition of Rhinoceros.—*By* Richard Lydekker, Esq., B. A.

On the extra-floral Nectar-glands of Aphelandra cristata, *Robert Brown.*—*By* J. Wood-Mason, Esq.

On the Genus Chœradodis.—*By* J. Wood-Mason, Esq.

LIBRARY.

The following additions have been made to the Library since the Meeting held in April last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Bombay. The Indian Antiquary,—Vol. IX, Part 105, April 1880.

London. Royal Geographical Society,—Proceedings, Vol. II, No. 3, March 1880.

———. Geological Society,—Quarterly Journal, Vol. XXXVI, No. 141, February 1880.

———. Royal Astronomical Society,—Monthly Notices, Vol XL, Nos. 3 and 4, January and February 1880.

———. Royal Asiatic Society of Great Britain and Ireland,—Journal, Vol. XI, Part 3, August 1879; Vol. XII, Part I, January 1880.

———. The Academy,—Nos. 412—414.

———. The Athenæum,—Nos. 2735—2737.

———, Nature,—Vol. XXI, Nos. 544 and 545, April 1880.

No. 545. Musical Pitch. *Ellis, A. J.*—The History of Musical Pitch.

Palermo. Società degli Spettroscopisti Italiani,—Memorie, Disp. 10, 11, and 12.

Paris. La Société de Géographie,—Bulletin, January and February 1880.

Roorkee. Professional Papers on Indian Engineering,—Vol. IX, No. 36, April 1880.

Sydney. Royal Society of New South Wales,—Journal and Proceedings, Vol. XII, 1878.

Vienna. Die kaiserliche Akademie der Wissenschaften,—Almanach für 1879.

———. ———. Archiv für österreichische Geschichte,—Vol. LVII, Part II; Vol. LVIII, Parts I and II.

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———. ———. Sitzungsberichte, mathematisch-naturwissenschaftliche Classe,—Part I, Vol. LXXVII, No. 5: Vol. LXXVIII, Nos. 1 to 5. Part II, Vol. LXXVII, Nos. 4 to 5; Vol. LXXVIII, Nos. 1 to 5; Vol. LXXIX, Nos. 1 to 3. Part III, Vol. LXXVII, Nos. 1 to 5; Vol. LXXVIII, Nos. 1 to 5; Vol. LXXIX, Nos. 1 to 5.

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No. 1429. *Haughton, S.*—The Best Route for a Line of Railway to India.

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No. 1061. *Meyer, V.* and *Züblin, H.*—A contribution to the knowledge of Chlorine.

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Fig. 1.

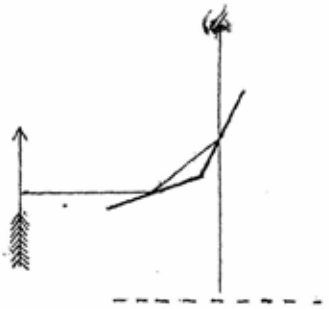


Fig. 2.

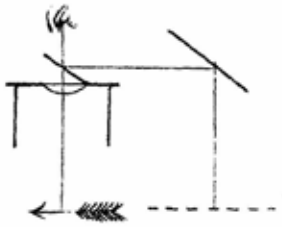
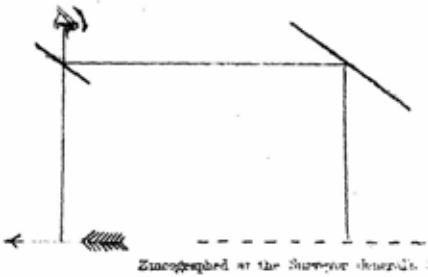


Fig. 3.



Zincographed at the Surveyor General's Office, Calcutta

On the use of Silver Films in improved instruments of the Camera Lucida Class by J. C. Douglas.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR JUNE, 1880.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 2nd of June, at 9.15 P. M.

H. B. MEDLICOTT, ESQ., F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the Edinburgh Botanical Society,—Report on the Temperatures during the winter of 1878-79 at the Royal Botanical Garden, Edinburgh.

2. From the Madras Government,—Standing Information regarding the Official Administration of the Madras Presidency in each Department, by C. D. MacLean.

3. From J. O. N. James, Esq., Assistant Surveyor General,—A Chart of India, in two Sheets.

4. From the Home, Revenue, and Agricultural Department,—(1) Jungle Life in India, by V. Ball, and (2) Select extra Tropical Plants readily eligible for industrial culture or naturalisation, by Baron Ferdinand von Müller.

5. From the Trustees, Astor Library,—Thirty-first Annual Report of the Trustees of the Astor Library for the year ending December 31st, 1879.

6. From the Royal Astronomical Society,—Memoirs, Vol. XLI. Observations made during total Solar Eclipses, by A. C. Ranyard.

The following Gentlemen, duly proposed and seconded at the last Meeting, were balloted for and elected Ordinary Members—

The Rev. J. S. Doxey.

J. MacDonald, Esq., C. E.

J. G. W. Sykes, Esq., LL. D.

The Giridhararaj of Biswan.

The following Gentlemen are candidates for ballot at the next Meeting—

1. P. Johnston, Esq., proposed by L. Schwendler, Esq., seconded by J. Wood-Mason, Esq.

2. J. M. Coates, Esq., M. D. Principal, Medical College, (re-election), proposed by J. Wood-Mason, Esq., seconded by H. B. Medlicott, Esq.

3. The Rev. Arthur Lewis, B. A., Dera Ghazi Khan, proposed by Lt. R. H. C. Tufnell, seconded by A. Pedler, Esq.

The SECRETARY reported that Mr. W. E. Brooks and the Hon'ble G. G. Morris had intimated their desire to withdraw from the Society.

Dr. HOERNLE exhibited a sealing-wax impression and sketch of a curious gold medal sent for the inspection of the Society by Thos. A. M. Gennoe, Esq., of Fyzabad, and read the following note on it by Dr. R. Mitra, addressed to the Philological Secretary. "I can make nothing of Mr. Gennoe's drawing and sealing-wax impression. The letters are, as you say, too modern to be of 57 B. C., and they do not convey to me the faintest idea of Vikramáditya. I read them very doubtfully *Srí २ sámijña janhu*, perhaps the name of a Gosain. The thing is not a coin but a medal. The idea of Vikramáditya has probably originated from the skulls on the obverse, but I feel satisfied that the medal has nothing to do with the originator of the Samvat era. It is desirable that the authenticity and antiquity of the thing should be carefully ascertained before it can be published. Mr. Gennoe does not give its history. The Lat character copper-plate palmed on Mr. Smith should put us on our guard."

Dr. Hoernle explained that Mr. Gennoe had thought the object to be a coin of Vikramáditya and of the first year of his era; but that he believed, with Dr. R. Mitra, that it was not a coin but, if anything at all, perhaps a medal of comparatively modern, possibly of quite recent, date. He was inclined to read the legend: श्री २ सामी जी जच्छ (or जच्चु), the last word occurring as a Rájpút name, and the numeral probably being "2," a common way of indicating the repetition of the preceding word. The medal is about 2 inches across. The obverse shows the walking figure of a man, carrying two skulls, suspended by straps, one from each shoulder. The reverse bears the above-mentioned inscription in large, somewhat illegible, modern Nágarí characters.

Dr. Hoernle exhibited a MS. of a hitherto unknown Prákrit Grammar, called Prákṛtánanda by Raghunátha. He stated that the MS., which was lent to him by his friend, Paṇḍit Ráma Miśra in Benares, was a modern Nágarí copy of an original in Bengálí characters which once belonged to the Bengálí Head-Paṇḍit, Trilochana Bhaṭṭáchárya, at the Court of Dhulíp

Singh in Lahore. He had not seen the original, and did not know what had become of it. The Nágari copy, which was very carefully written, had been prepared for his own use by Paṇḍit Rámadatta of Amritsar. The MS. bears the following subscription: *iti śrí jyotirvit-sarasátmaja-raghunátha-kavi-kaṇṭhírava-virachite prákṛtánande dvitíyaḥ parichchhedaḥ samáptaḥ, prákṛtánandaś cha; samvat* 1893. As this subscription shows, the work is divided into two sections; but each section is divided into a number of subsections, which are not numbered, but merely indicated by *iti; e. g.*, *iti samdhiḥ* (I, 1), *ity ajantáḥ pumlingáḥ* (I, 2), etc. The work contains no more than Vararuchi's rules, but is not without interest, inasmuch as it completely re-arranges Vararuchi's sútras on a system resembling that of the Laghu Kaumudí with regard to Páṇini. The first section treats of Declension, with the exception of the first subsection which is devoted to rules on sandhi. The second section treats of Conjugation. The subsection on sandhi contains the following seven sútras of Vararuchi in the order indicated: Vr. IV, 1. 12. 13. 14. 15. 16. 17. In the last sútra, *i. e.* Vr. IV, 17, the MS. reads correctly ऋवि (for यवि), which is also the reading of the MS. mentioned in the Proceedings for March 1879 (here called F) It is a curious fact that the readings of that MS. of Vararuchi, which also belonged to Paṇḍit Rámadatta, as well as the readings of Cowell's MS. W, are found in this MS. of the Prákṛitánanda. Thus, for Vr. 5, 16. this MS. reads जस ओच्च यूलं with MS. F, and adds पाठांतरे तु। जस ओ चो वाऽलं यूलं च with MS. W. Again after Vr. IX, 10 it adds, with MS. W, the sútra अव्वो अम्मो दुःखाक्षेपविस्मापनेषु, and adds a long remark to explain the repetition of अव्वो. Again for Vr. VIII, 37. its commentary runs thus चि चये। अस्य भिव्वा इत्यादेशः स्यात्॥ चयति भिव्वा.इं भिव्वाए॥ क्विब्भिव्वावप्येके, as in MS. F; (or भिव्व, भिव्वइ, भिव्वए; the letters are not quite distinct. In Vr. VIII, 69 it reads णिचक्क. For Vr. VIII, 7 it reads, with MS. F, णुदो लोणः and example लोणइ, but adds, with MS. W, णोल्ल इति पाठे णोल्लइ. In Vr. VIII, 59 it reads दुहि-लिहि-वहां दुव्भ-लिव्भ-वव्भाः and examples दुव्भइ लिव्भइ; the conjunct व्भ is unmistakeable, ब्भ being written very differently. These are only a few of its noteworthy readings. The following may serve to show the arrangement of the Grammar. The second subsection of the first section treats of the declension of masculine nouns ending in vowels. It contains 145 of Vararuchi's sútras in the following order: Vr. V, 1. II, 42. II, 2. VI, 63. V, 2. V, 11. 12. V, 3. 4. 5. VI, 64. V, 8. V, 6. 7. V, 9. V, 13. V, 10. V, 27. IV, 6. I, 1. I, 3. I, 29. III, 62. II, 8. III, 3. III, 50. III, 1. III, 15. III, 64. II, 31. III, 2, &c., &c. Then follows a subsection on feminine nouns ending in vowels, and another on neuter nouns ending in vowels. Then follow three subsections on masculine, feminine and

neuter nouns ending in consonants; and one more on indeclinables. The second section treats in six successive subsections on the following tenses; laṭ, liṭ, luṭ, lṛṭ, loṭ (with laṇ, liṇ, ásírliṇ), luṇ. Then follow ten subsections on the irregular verbs, arranged according to the 10 classes. Then come two subsections on the formation of the Causal and the Passive. Lastly there is one subsection on the derivation of words by nominal suffixes; this contains the following sútras: Vr. VIII, 2. VIII, 5. VII, 82. VIII, 62. VIII, 55. IV, 23. VIII, 16. IV, 24. VII, 10. The last three sections of Vararuchi's Grammar on the subordinate Prákrit dialects are omitted in the Prákṛitánanda, which accordingly might be thought to be incomplete, but for the final statement in the subscription above quoted. A copy of the MS. of this work has been retained by Dr. Hoernle.

Dr. HOERNLE exhibited some brass coins found in a well near the Grand Trunk Road and read a memorandum on the same by H. Rivett-Carnac, Esq.

Mr. Rivett-Carnac says:

I submit for the inspection of the Society specimens of brass coins made over to me by Mr. D. T. Roberts, C. S.

Upwards of 1½ maunds weight of these coins were recently found in a well near the Grand Trunk Road in the Fatehpur District, N. W. P.

They were found in bulk, *i. e.*, loose, and not in a bag, or box or earthen pot. Dr. Rudolf Hoernle to whom I sent two or three specimens for identification has pointed out that they are Chinese coins of the type described by Marsden p. 828 and are of king Kienlong, or Kaontsouzshen of the Manchu Dynasty who reigned up to 1795, A. D. and of King Kiakung son of the preceding king.

I now send a considerable number, many of which seem to bear different legends. On one side the letters are distinctly Chinese. On the other they bear a striking resemblance to Arabic characters. It is difficult to account for this large find of Chinese coins in a well on the Grand Trunk Road.

Mr. WOOD-MASON exhibited a small collection of Butterflies from the Andamans and read some notes thereon by Mr. de Nicéville and himself.

Thirty-five species only are included in the present list, of which one is an apparently new species of *Papilio* closely allied to the continental *P. antiphates*, of which it appears to be the Andaman representative, and from which it differs in the much greater extent of the black bands of the fore-wings, and the much more strongly expressed black markings, the more extensive grey area, and the black-mottled median area of the hind-wings.

The name *P. læstrigonum* is proposed for the species, to indicate its affinity to the mainland form.

These notes will be published in the Journal, Part II.

The following papers were read—

1. *Notes on the Dentition of Rhinoceros.*—*By* R. Lydekker, Esq., B. A.
2. *On the Extra-floral Nectar-Glands of* Aphelandra tetragona—*By* J. Wood-Mason, Esq.
3. *On the Species of* Choeradodis, *a Genus of* Mantodea *common to India and Tropical America.*—*By* J. Wood-Mason, Esq.

These three papers will be published in the Journal, Part II.

4. *Note by* H. F. Blanford, Esq., F. G. S., A. R. S. M., &c., *to accompany some drawings of large Hail-stones by* Col. H. H. Godwin-Austen, *and* S. E. Peal, Esq.

The figures of large hail-stones which accompany this note (Plates II and III) were communicated to me at an interval of three years, by Col. Godwin-Austen and Mr. Peal, and are of interest as affording characteristic specimens of the form and structure most common in hail-stones of large size in India. The stones (Plate II), figured by Col. Godwin-Austen, fell at Calcutta on the 16th—17th March 1877, in a storm which was remarkable for the unusual lateness of the hour. It commenced a few minutes before midnight, and the hail continued to fall for about a quarter of an hour, accompanied, as is usual, by rain, and violent gusts of wind. In a paper by Dr. Buist, published in the British Association Report for 1855, the author quotes a remark of Dr. Spilsbury to the effect that of 30 storms recorded by him in India, only 3 occurred after dark and none later than midnight, and in my own experience, I do not recollect any previous instance of a hail-storm at so late an hour.* The stones presented one somewhat unusual feature, *viz.*, radiating prominences of transparent ice, in some cases sub-angular and more or less conical, but in many instances cylindrical or club-shaped, some striking specimens of which form are represented in Col. Godwin-Austen's figures. It is probable that the rounded contours are due to the partial fusion of the ice; but I could not detect in any of the more angular prominences the characteristic hexagonal crystalline form of water. All the specimens figured, and those obtained by myself in this fall had a large nucleus of opaque ice surrounded by a thick transparent coating. Three of the stones figured are

* Since the above was written I have experienced a hail storm at Simla at three o'clock in the morning. The above remark still holds good for the plains however.

larger than any observed by myself. Of those which I collected, five yielded on fusion, three fluid ounces of water.

The stones figured on Plate III from drawings by Mr. S. E. Peal, fell on the 11th April 1880, at 5 P. M. at Sapakattie in Upper Assam, and the drawings were accompanied by a few brief notes which I embody in the following remarks:

Two stones weighed 700 and 720 grains respectively and measured 5½ and 6 inches in circumference. Mr. Peal remarks that many were probably far larger. In form they varied from globular to egg-shaped and oblate. The surfaces were generally white and bluntly angular. Fig. 1 represents the external appearance of an ovate-stone. Figs. 2 to 5 the appearance of sections obtained by a man rubbing the hail-stone in his hands, and melting two sides only, until the mass was reduced to a thin lenticular disk. Fig. 2 represents the internal structure thus developed, the shaded parts being clear translucent ice with a radial structure, the white or whiter portions more or less opaque, when held up to the light. The majority, as in figs. 2, 3 and 4, had a dead white nucleus, surrounded by translucent ice, with, in all cases, radial markings. Some, like fig. 5, showed concentric lamination, consisting of white and translucent ice alternately in close concentric layers; and between 20 and 30 per cent. had a transparent central nucleus about half an inch across. Mr. Peal further observes that the majority appeared to be light, as judged by their size, and they fell with less impetus than might have been expected. The wind was from the North at the time.

I have already remarked that these stones exhibit for the most part the form and structure most characteristic of such large hail-stones as have come under my observation in India. All that I have ever seen are more or less oblately spheroid or discoid, having sometimes a central depression on each of the flatter surfaces. Stones of a conical or conoidal form which appear to be not unfrequent in Europe, and which one recent writer has described as typical, I have never yet seen in India.

5. *Memorandum by* H. RIVETT-CARNAC, ESQ., C. S., C. I. E., F. S. A., *on Clay Discs, called "Spindle Whorls," and Votive Seals found at Sankisa, Behar; and other Buddhist ruins in the North Western Provinces of India.*

The object of this paper is two-fold. It first describes minutely the objects named in the title; afterwards it points out many points of resemblance between them and the objects discovered by Dr. Schliemann in his excavations at Hissarlik. For the latter purpose copious extracts are given from Dr. Schliemann's work on Troy.

Some conversation took place regarding the subject of this paper. The general opinion seemed to be, that it would be desirable to have some further information as to the authenticity of some of the objects, brought in by the villagers as "antiquities."

This paper will be published in the Journal, Part I, together with a Plate of discs and seals.

At the close of the meeting a collection of Sonthál, Bhootea, Gáro and Nágá weapons &c., sent by Mr. Robertson Pughe was exhibited. The collection was made up of the following articles.

Sonthàls.

A. A Sonthál bow and arrows. In some of the arrows the pith of a plant is used instead of feathers. The arrow with a wooden head is used for knocking over small birds.

B. Axes or "tangis."

C. Flute.

D. Cymbals.

Bhooteas.

E. Bhootea helmet, the owner of this was killed at the attack on Chamoorchee stockade, December 1864.

F. Bhootea shield (probably bought in our territory) and

G. Bhootea straight sword worn on the right hip. This was captured at Domohoni stockade, December 1864.

Gáros.

H. Gáro shield with tuft of bear's hair.

J. The universal Gáro sword.

K. Gáro spears.

L. Gáro pipe.

Nágás.

M. Nágá "dao," or sword, ornamented with goat's hair.

N. Nágá spear. At 40 yards the Nágás are dead shots with this weapon.

O. Lepcha knife.

P. A knife belonging to one of the Upper Assam Hill Tribes probably the Khamptis.

LIBRARY.

The following additions have been made to the Library since the Meeting held in May last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Bombay. The Indian Antiquary,—Vol. IX, Part 106, May 1880.

Brayfill, Col. B. R.—The Gangai-Koṇḍapuram Saiva Temple. *Richards, Rev. W. J.*—Notes on the Taṇḍu Pulayans of Travankore. *Hoernle, Dr. A. F. R.*—Notes on a Rock-cut Inscription from Riwâ. *Beal, Rev. S.*—Remarks on the word Sramana. *Fleet, J. F.*—Sanskrit and old Canarese Inscriptions, Nos. LXXVI to LXXIX.

Brussels. Société Royale des Sciences de Liége,—Mémoires, Vols. VII and VIII.

Vol. VII. *Koninck, L. G. de.*—Recherches sur les fossiles paléozoïques, de la Nouvelle-Galles du Sud (Australie).

Vol. VIII. *Eichhoff, W.*—Ratio, Descriptio, Emendatio Eorum Tomicinorum qui sunt in Dr. medic. Chapuisii et autoris ipsius Collectionibus.

Buda Pest. Hungarian Academy,—Almanach, 1879, 1880.

———. ———. E'rtekezések,—Vol. VII, Nos. 3—10; Vol. VIII, Nos. 1—4.

———. ———. E'rtesítöje,—Parts 1—7, for 1878; and 1—6 for 1879.

———. ———. E'vkönyvei,—Vol. XVI, Nos. 2—5.

———. ———. Literarische Berichte,—Vol. II, Nos. 1—4; Vol. III, Nos. 1—4.

———. ———. Nyelvemléktar,—Vol. VI.

———. ———. Nyelvtudományi,—Vol. XIV, No. 3; Vol. XV, Nos. 1—2.

Calcutta. Geological Survey of India,—Memoirs, Vol. XVII, Part 2.

Wynne.—Trans-Indus extension of the Punjab Salt Range.

———. Indian Meteorological Memoirs,—Vol. I, Part 4.

The Winds of Kurrachee.

———. Register of Original (Meteorological) Observations in 1879, reduced and corrected,—February and March 1879.

———. The Mahábhárata,—No. 46.

Edinburgh. Botanical Society,—Transactions and Proceedings, Vol. XIII, Part 3.

Brook, G.—Notes on the Salmon Disease in the Esk and Eden.

Christison, Sir R.—The exact measurement of Trees. The Yew Tree. The Fortingall Yew.

Edinburgh. Royal Society,—Proceedings, Session 1878-79.

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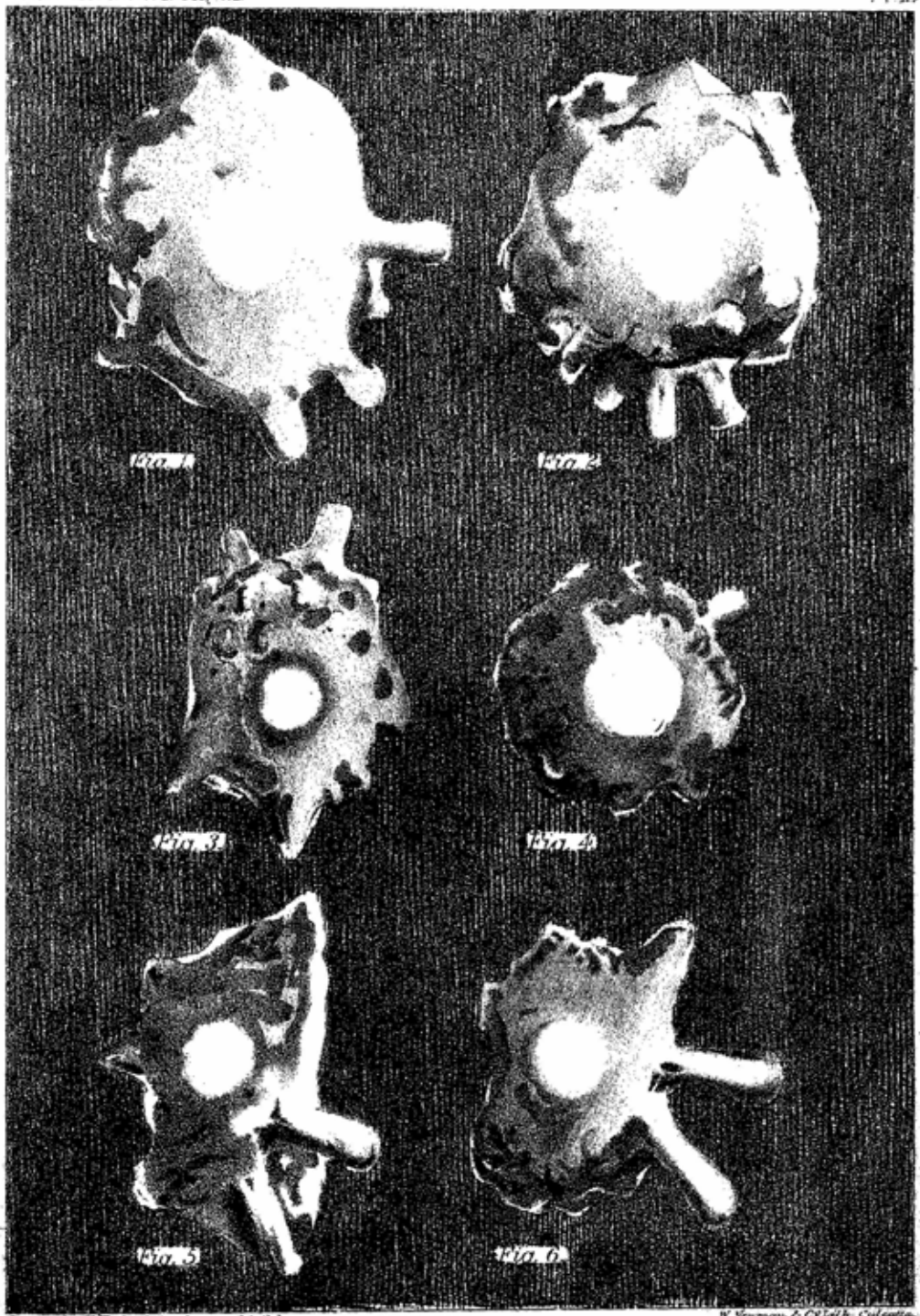

Drawn by H. H. Godwin Austen, Lt. Col.

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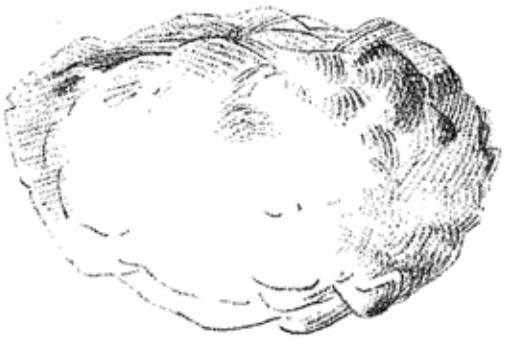

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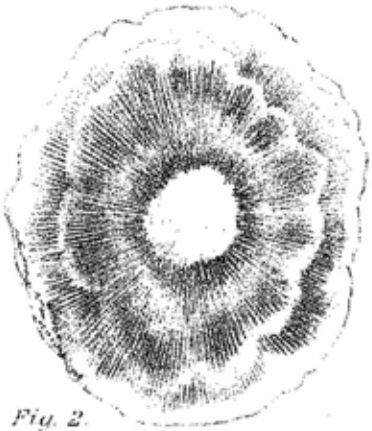

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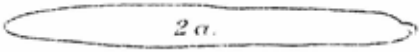

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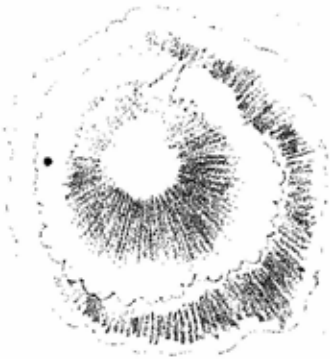

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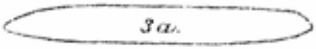

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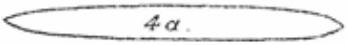

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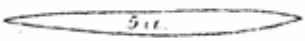
Fig. 5.



5 a.

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FIGURE AND SECTIONS OF HAILSTONES (*nat size*) SAPAKATTIE.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR JULY, 1880.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th of July, at 9.15 P. M.

H. B. MEDLICOTT, Esq., F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the Superintendent Marine Survey Department,—A Chart of (1) Dabhol and entrance to Washishti river, (2) Kundari Island to Chaul, and (3) Saláya or Seraia.

2. From the Numismatic and Antiquarian Society of Philadelphia,—Some Monetary Questions viewed by the Light of Antiquity, by R. N. Toppan.

3. From the Editor,—Sanskrit Dictionary, by Hem Chandra, edited by Dr. Ram Das Sen.

4. From the President of the Anjuman-i-Panjab,—(1) Proceedings of the Anjuman-i-Panjab in connexion with the proposed bill for the appointment of persons to the office of Kázi, and (2) Report of the Oriental College, Lahore, for 1879.

5. From the Madras Government,—(1) Three Maps and twenty-three Photographs, and (2) Lists of Sanskrit MSS. in private Libraries of Southern India, Vol. I, by Dr. G. Oppert.

6. From the Department of the Interior, U. S. America,—(1) Tenth Annual Report of the United States Geological and Geographical Survey of the Territories for the year 1876, by F. V. Hayden, and (2) Catalogue of the Publications of the U. S. Geological and Geographical Survey of the Territories. Third edition.

7. From the Comptroller of the Currency, U. S. America,—Annual Report of the Comptroller of the Currency to the Second Session of the 46th Congress of the United States, December 1st, 1879.

8. From the Zoological Society of London,—List of the Vertebrated Animals now or lately living in the Gardens of the Zoological Society of London. First supplement, containing additions received in 1879.

9. From the author,—A comparative Grammar of the Gaudian Languages with special reference to Eastern Hindi, by Dr. A. F. R. Hoernle.

10. From the author,—Tenth Annual Report on the Health of Salford for 1877-78, with statistical abstracts for 1869-78, by Dr. J. Tatham.

The following Gentlemen, duly proposed and seconded at the last Meeting, were balloted for and elected Ordinary Members—

P. Johnston, Esq.

J. M. Coates, Esq., M. D. (re-election).

The Rev. Arthur Lewis, B. A.

The following Gentlemen are candidates for ballot at the next Meeting:—

1. Pandit Mohanlal Vishnulal Pandia, proposed by Dr. R. L. Mitra, seconded by A. Pedler, Esq.

2. The Hon. J. Gibbs, C. S. I., M. R. A. S., Simla, proposed by H. Rivett-Carnac, Esq., seconded by Dr. G. Thibaut.

3. Rajá Siva Prasad, C. S. I., Benares, proposed by H. Rivett-Carnac, Esq., seconded by Dr. G. Thibaut.

4. J. A. Brown, Esq., C. S., Benares, proposed by H. Rivett-Carnac, Esq., seconded by Dr. G. Thibaut.

5. W. Lambe, Esq., C. S., Jaunpur, proposed by H. Rivett-Carnac, Esq., seconded by Dr. G. Thibaut.

6. H. W. W. Reynolds, Esq., C. S., Jaunpur, proposed by H. Rivett-Carnac, Esq., seconded by Dr. G. Thibaut.

The SECRETARY reported that the Hon'ble J. S. White had intimated his desire to withdraw from the Society.

The PRESIDENT announced that, in accordance with the notice given at the May meeting, the votes would be taken on the proposed amendments to Rules 4 and 46.

Messrs. Waldie and Blackburn were appointed Scrutineers, and reported that the votes were one hundred and eleven for, and one against the amendments.

The PRESIDENT announced that the amendments were carried.

The SECRETARY laid upon the table the following publications of the Society which had been published since the meeting held in June last:—(1) Journal, Vol. XLIX, Part I, No. 1, (2) Journal, Vol. XLIX, Part II,

No. 1, (3) Shaw's Turki Vocabulary which has been issued as an Extra No. of Part I of the Journal, and (4) Proceedings for April and May 1880.

Dr. A. F. R. HOERNLE read a Memorandum by Mr. H. Rivett-Carnac, supplementary to the one read at the last meeting, on Clay Discs, Spindle Whorls, &c.

This paper will be published with Mr. Carnac's first paper on the same subject in the Journal, Part I.

Dr. A. F. R. Hoernle exhibited four gold and four silver coins, Bactrian and South Indian, sent by Major-General G. G. Pearse.

GENERAL PEARSE writes—

I have the honor to forward for the inspection of the members of the Society a gold Rama Tunka coin which I have lately procured here. There are several of these coins in the Mysore country.

I trust it may be figured in our Journal, for if not now read, hereafter it may be so. Unless it has already been published and is no novelty.

I believe that the flat Rama Tunkas are the most modern ones, and that the cup-shaped ones are the oldest; these last I attribute to the age when cup-shaped coins were prevalent in Byzantium, *i. e.*, from the 10th to the 14th centuries A. D. The oldest Rama Tunkas, I believe, may be attributed to the Jain or Hoysálá Bállálá dynasty of Hullabeed or Dwaravati or Dorasamudra in the present Mysore territory. This dynasty flourished from the beginning of the 10th century till A. D. 1310, when the Ghilzye Muhammadan General Kafúr from Delhi sacked the capital.

The Vijayanuggur dynasty arose after the fall of the Hoysálá Bállálás in A. D. 1336, it lasted till A. D. 1565 when it fell before a Muhammadan confederacy at the battle of Talikota, near Raichore, on the 25th January, 1565.

I attribute the later cup-shaped Rama Tunkas and all the flat ones to this great Vijayanuggur dynasty.

From the Vijayanuggur dynasty have indirectly sprung those of Mysore and other Southern Indian ones. This explains why remains of the Hoysálá Bállálá and Vijayanuggur dynasties are found in the Mysore territories.

The last king of Vijayanuggur was Rama Raja, he was killed at the battle of Talikota. Here, not knowing why, the people attribute this enclosed Rama Tunka to this prince. They may have reason.

The coin is of considerable interest, for, as will be seen in the annexed wood-cut, apparently characters of three different languages are figured on it, none of which seemingly can now be read here.

I describe the coin as follows:

Gold Rama Tunka, coin of Vijayanuggur.

Size, Mionnet's scale, nearly 10.

Weight 12·281 grams or 189·52 grains.

Age, Circa A. D. 1564.

Obverse. Rama and Seeta, seated on a throne, on the right a supporter upholds a royal umbrella; this is probably meant for Rama's ally Vibhishana the brother of Ravana. On the left, a lion and a monkey, this last probably meaning a Dravidian or a Rákshasa, are supporters. Above them may be letters or symbols? there is a star. Below them may be letters or symbols? There are an altar, a necklace and stars.

Reverse. Here there are eight figures all upholding various kinds of regal umbrellas of the peacock feather kind, such as are still in use in Southern India. These possibly depict the servants or followers of either Rama, or the king who struck the coin. Above these eight figures is decidedly an inscription, if looked at facingly, *i. e.*, in the usual way, it looks like Pehlevi: such I cannot conceive it to be. If the coin is turned upside down, the inscription looks like blundered Persian. Below the eight figures is what seems an inscription of a Javanese or Assamese type of Nagri.

The coin is in excellent preservation, every letter being perfectly legible.

Further I forward for the inspection of the members—three beautiful gold coins, all are I believe unique. They were found in the year 1878 in the river Oxus near Kúndúz in an old deserted Fort.

1. A stater *and a half(?)* of Diodotus, King of Bactria, with emblems of Antiochus.
2. A stater of Odgoras, a Scytho-Greek king.
3. A stater with Arian inscriptions of a Scythic king.

In a second communication relating to the same subject, General Pearse writes—

"In continuation of a late note of mine submitted when forwarding some gold coins, I have the honor to inform you that several more gold coins of the Oxus hoard are falling into my hands, amongst them that very rare coin, the Stater of Enthydemus. The specimen in my hands is in very good preservation and is of beautiful workmanship, but it has seen some circulation.

"The Staters of Antiochus and Diodotus are all new coins and in perfect preservation.

"I have another of those Stater and a half coins of Diodotus and Antiochus of which I have sent you one. I observe that like the one sent you, it is much worn, *i. e.*, used; this is very worthy of notice. The one I have with me is much more worn than the one with you."

Impressions of these coins were submitted to General Cunningham for his inspection, and his opinion of them will be gathered from the following remarks which he has sent to the Philological Secretary.

"I am sorry, for General Pearse's sake, to tell you that three of the gold coins of which you have sent me impressions are forgeries. The large Rámatanka is of course a genuine coin. Of two of his coins I possess the genuine originals from which the forgeries have been made.

"No. 1. Head of a king bearded, with victory in a 4-horsed chariot in the reverse, and the legend ΟΑΓΟΡΟΥ. I have already *seen* five of these forged coins. The forger luckily did not know Greek. My genuine coin has the beginning of the name cut off, as follows:

"The forger took the remainder as the complete name, and made the impossible name of ΟΑΓΟΡΟΥ.

"No. 2. Head of Alexander with lion's scalp as Hercules. *Rev.* Victory—ΔΙ—. I have a genuine large double stater of these types; and as I know that forgeries have been made from it, I conclude from the evil company in which it is found, that General Pearse's coin must also be a forgery.

"No. 3. Head of Parthian king—Victory in chariot—with 2 inscriptions one on each side, not yet read. The original genuine coin is in the British Museum. I take General Pearse's coin to be a forgery from the impression which you have kindly sent me. In this I see that the horse is represented in *outline* which, as far as my experience goes, stamps the coin as a rank forgery.

"For several years past whenever a new coin has been found, it has always been followed by a number of forged copies. I pay large prices for the genuine coins—and so does the British Museum—and rare coins are not to be obtained now, except by chance, for even moderate prices."

Dr. A. F. R. Hoernle exhibited eleven gold coins, Roman, Indo-Scythian and Gupta, belonging to Colonel Berkeley, sent by Mr. H. Rivett-Carnac, C. S., C. I. E., &c.

Mr. Carnac writes the following note on these coins:—

"I send for the inspection of the Society eleven gold coins, which were discovered together with a quantity of gold mohurs by Col. Berkeley, Political Agent, in a subterranean Treasury at Rewah soon after the death of the late Maharajah.

"One of these coins is a Gupta. Eight of them are Indo-Scythic, the remaining two are Roman.

"I confess that at first some of the coins seemed to have been cast. And I supposed that they had perhaps been brought to Colonel Berkeley by Bombay traders. In this case they would have been very suspicious. But the manner in which they have been found, makes it I think, much less probable that they are forgeries.

"Some of them too have been used for necklaces and are much worn on one side.

"I should be much obliged if Dr. Rudolf Hoernle or Dr. Rájendralála Mitra will examine these coins and favour Colonel Berkeley and the Society with their opinions on them.

"If any of them are rare, Colonel Berkeley would I am sure be glad that they should be figured as well as described in the Society's Journal."

Dr. Hoernle made the following remarks:—the Gupta coin is probably one of Chandra Gupta II; it has the legend श्री विक्रम *Śrí vikkrama* (with double *k*). The Indo-Scythian coins are of Kanerki and Hverkí, all well known. Of the two Roman coins one is of the Emperor Commodus, of about A. D. 190, described in Akerman's *Roman Coins*, Vol. I, pp. 303, 307. The other is of Clodius, the short-lived rival of the Emperor Severus who perished in battle A. D. 197. The reverse of this coin shows a genius with radiated head, and the legend SAECVLO FRVGIFERO Cos. II. Akerman in his *Roman Coins* mentions no gold coin of this kind, but he does describe a *very rare* brass coin, agreeing with this coin in every respect (see Vol. I, p. 339); moreover he also describes a *very rare* gold coin, which agrees with the present coin in every respect, except that, on the reverse, it reads SAECVLIO instead of SAECVLO. Adding to this, that the present coin still bears distinct traces of its having been cast in a mould; there can be no doubt, that it is a forgery, a gold coin imitated from the rare brass coin. The other Roman coin and one or two of the Indo-Scythian ones also have a suspicious look, and having been found in company with an undoubtedly forged coin, their genuineness is questionable.

Dr. A. F. R. HOERNLE exhibited four coins of various sorts sent by Mr. V. A. Smith who writes the following note on them:

"I enclose a gold coin which I hope you will kindly identify for me. I believe it is one of the very rare Chandel coins but, after careful comparison of it with a gold coin of Madana Varmma and a copper one of Jaya Varmma (for which I am indebted to General Cunningham), I cannot make out the Rája's name.

"I also submit some other coins in hopes that they may be of some interest.

"No. 2 is a curious looking old coin but so much damaged as hardly to be recognizable.

"No. 3, with its Greek legend Μεγας βασιλευς is, I suppose, Bactrian, but whether common or not, I do not know.

"No. 4 is much worn, and its outline has been destroyed, but a few legible characters may suffice to identify it.

"No. 5, is a fine silver coin of Sher Sháh's.

"Should this or any of these other coins be desired by the Society, they are at its disposal."

The coins were sent to Dr. Mitra for identification, and he recognizes them as—

No. 1. Gold. Old Hun Dinára. Carnatic.
No. 2. Varaha coin. श्रीमदादिवराह.
No. 3. Soter Megas.
No. 4. Kota, Rao of 191 ? (the fourth figure is either 2 or 9) Samvat.
No. 5. Sher Sháh.

The PHILOLOGICAL SECRETARY, in Dr. Mitra's absence, exhibited a palm-leaf MS. of the Setubandha, 672 years old. Dr. Mitra has communicated the following note on this MS. :—

The codex comprises 86 folia, each measuring 14 × 2 inches. Its material is palm-leaf, having the edges rounded by the ravages of mice, and the centre perforated for a string to tie the leaves together. Each page bears five lines of writing in the Bengali character, interspersed with interlineations and marginal notes written in very minute but perfectly clear and well-formed letters. The language of the work is Prákrit, but the notes are in Sanskrit. Its subject is an epic poem on the invasion of the Island of Ceylon, by Ráma, as described in the Rámáyaṇa of Válmíki. The work is ascribed to Pravarasena, of Káshmír, who reigned about the middle of the 4th century. It is held in high esteem by Sanskrit scholars, but MSS. of it are exceedingly rare. An excellent edition of it by the learned Professor Siegfried Goldschmidt, of Strassburg, has, however, lately made it easily accessible to students.

The name of the work is not always given in the same form. It is usually quoted under the name of *Setubandha*, or the "Marine Causeway," but in the colophon of Professor Goldschmidt's edition the homonym, *Setusaraṇi*, has been preferred. It is also known under the names of

Rávanavaho, the "Destruction of Rávaṇa," and *Daśamukhavaho,* "the Destruction of the ten-headed monster."

There are three commentaries extant on this work, the first two of which, by Rámadasa (*Setupradípa*) and Krishṇa (*Rámasetu-vivaraṇa*) respectively, have been noticed by Professor Goldschmidt. The third, by Kulanátha, is exceedingly rare, and of it the only MS. I have seen is now in my possession; it is entitled Rávanabadha-ṭíká. I intend shortly to send a copy of it to the learned editor. The fourth occurs in the Library of the Sanskrit College of Calcutta, and is entitled *Setuchandriká.* There is also in that Library a Sanskrit paraphrase of the work, but the codex is very defective, wanting both the beginning and the end, and I have not been able to ascertain its name.

The most important circumstance connected with the codex under notice is its date. This is given in Prákrit thus:

सिरि लक्खणस्स चमदेस सुवहरे राज्ञ वेविद्ए।
पोसम्मि-सूरमन्दसि सुपचे चदमस दिन्खचे।
दोस्ख-विस्सागमे लिखितासी वानीनाथेनेति॥

Two of the words in this extract are not intelligible to me; but the purport of the whole is clear enough;—it means that the MS. was completed by one Váníṇátha, on Monday, the 16th of the waxing moon in the month of Pausha, (*lit.* when the sun sojourned in the constellation Pusyha), of the year of the king Lakshmaṇa 102. The figures of the year are given in three words *dosa kha vissa* which *dosa* means the "arms" = 2; the second *kha* "sky" = a cypher; and the third *vissa*, the "universe" = 1. They have, according to the usual rule, to be read from the right side. I have elsewhere noticed that the era of Lakshmaṇa Sena begins from the year 1106, (Journal, Vol. XLVII, p. 399), and the date, therefore corresponds, with A. D. 1208. This gives to the codex an age of 672 years.

Of Nágarí MSS. I have seen two or three works of an older date, but in the Bengali character this codex is the oldest that has come under my notice. It shows that seven hundred years ago, the Bengali letters were exactly of the same type as they were a hundred years ago, or until they were modified by the type-founders of Serampur at the close of the last century. The only peculiarities observable in the codex are—1st, the formation of the letter ব, which is indicated by a dot in the centre of ব; 2nd, the letter ক্ষ, which is shaped like the Nágarí letter; and 3rd, the র which is formed by putting a horizontal line within ব, thus ব্র. This last form was current even at the beginning of this century. This shows that the present Bengali character, though formed on the model of the Nágarí, has had a currency, distinct and independent without any change, for a period of seven hundred years, and looking to the uniform well-defined configuration of the letters in the MS. it would not be unreasonable to suppose that it had an independent existence for a considerable time before that period. It is impossible

to believe that the character came into currency ready-formed and fully developed in the time of Lakshmaṇa Sena. Doubtless the Budál inscription of the Pála era, and the Sena copper-plates hitherto discovered, are in the Deva Nágarí type of some kind or other, but not in the Bengali as it appears in the MS.; but that must be accounted for on the supposition, either that the Nágarí was believed to be the most appropriate for Sanskrit records, or that for lapidary purposes the angular Nágarí was preferred or better suited than the comparatively more cursive Bengali.

Looking to the unchanging currency of the Bengali character, for so long a period, the question may be asked, were the durations of the characters which had been current before it fully or nearly as protracted? The question is a most important one for the satisfactory settlement of dates from the forms of letters, and its solution is yet a desideratum. James Prinsep was the first to notice the subject in connexion with his researches into the dates of ancient inscriptions. He devised a system of palæographic chronology in which the style of the writing was taken as an index to the age of the document in which it was found. His plan was matured after a careful examination of a considerable number of ancient inscriptions and coins, and recorded in two tables, (Journal, Vol. VII, plates XIII and XIV,) in which different centuries were assigned each a particular set of characters. The materials available to him were, however, not large, and, doubtless, he took his tables to be merely tentative, subject to considerable corrections and modifications resulting from subsequent researches; for it is difficult to believe that he took each particular set of characters to belong to one particular century and no more, or assumed that the same character was common over all the Sanskritic regions for a given period. Change in the style of writing, like that in language, is a slow process, governed by a variety of causes, which tend to retard or accelerate its course, and, except in local and individual peculiarities, no marked divergence is perceptible until after periods which must, in the ordinary course of human progress and irrespective of extraordinary commotions or sudden changes in the material or instrument of writing, be reckoned by centuries, and not by years. Nor do the causes which produce the change operate with equal force every where, nor are the same causes in full operation in all places at any given time. Some of them are in some places more potent than in others, and various circumstances tend to accelerate or retard their action. Hence it is that we find that a particular style of writing, while predominating in some places, is dying out in others. The history of the German and the English characters in Europe affords a singular illustration of this fact.

The number of Indian inscriptions discovered since Prinsep's time is large, but little has as yet been done to systematize the information collect-

ed. The only work of importance published since Prinsep's days is Dr. Burnell's "Southern Indian Palæography;" but it has not contributed much to elucidate this phase of the question. In fact, our discoveries, though large, are not yet sufficiently varied and extensive to admit of a satisfactory solution as to how far styles of writing may be relied upon as guides to chronology. This has, however, not been borne in mind by many orientalists, and much mischief and considerable misunderstanding have thereby been caused in connexion with Indian dates. The practice of taking a dated inscription as a guide, and assuming all undated records written in its character to be of that date is becoming too common. Some renowned antiquarians have adopted this course of proceeding, and I must frankly confess, to my regret, I have myself sometimes followed their lead. It is, however, not the less reprehensible on that account. It leads to the same error, which would have resulted if the MS. under notice had not been a dated one, and I had, comparing it with a dated MS. of the 17th century which I have now before me, pronounced it to be of that age; and this is exactly the kind of mistake which has of late been committed repeatedly in connexion with what Prinsep called the Cave and the Gupta characters; and, in the hands of persons who do not themselves read inscriptions, the names become the veriest Will-o-the-wisps. With them every inscription in the Gupta type must be of the 6th century, because some one has discovered a dated record in that character. The Bádámí inscriptions for instance. Others, taking the Manadeva inscription, dated Samvat 386 = A. D. 329 (*Indian Antiquary*, IX, p. 163), or the Jayavarmá inscription of A. D. 356. (Samvat 413) or the Vasantasena record of A. D. 378, (Samvat 435) as their guide, may put down the Gupta to the 4th century, and pronounce all records in that character to be of that age. This can only lead to the confusion, and not to the elucidation, of Indian history. Lately I had occasion to protest against an attempt to determine the changes in the Páli character within the short periods of twenty and thirty years (*ante*, p. 9) and what I said then fully applies to the cases of the Gupta and the other types. Nowhere have I seen any attempt made to ascertain the extent of difference which arises from the difference in the grain of the stones on which inscriptions have been inscribed.

It is the farthest from my wish to urge that, because, on the authority of the MS. now submitted, I hold that the Bengali character has now had a currency of seven or eight centuries without any material change, the leading groups of the Kuṭila, the Gupta, the Cave, and the Páli characters must each have had as prolonged a currency. I would say nothing of the kind, for as yet we have not data sufficient to determine that question; but I am convinced that the practice of assigning each of them to one or two centuries is a mistaken and mischievous one, and should be guarded against.

The PRESIDENT than exhibited a specimen of Rock-salt forwarded to the Society by Dr. Aitchison, and made the following remarks on the subject:

In continuation of the collection of rocks noticed in our Proceedings for January, we have received from Dr. J. E. Tierny Aitchison, botanist to the Kuram field-force, "a piece of black or gray coloured rock salt that was collected near the village of Páre-Angúri in Chakmani territory, about 20 miles from Kuram Fort." The specimen was given to him by Mr. Christie, the Political Officer, and there is no mention of the conditions of its occurrence. It may be presumed that the Political officer made a note of whether the mineral was worked, and to what extent, but the information has not been communicated. On the maps the Chakmani country lies at some distance to the west of the fort, and south of the Kuram river. The blackness is only superficial, and is apparently due to the accummulation, in the process of melting, of the particles that give a grey tinge to the salt. This impurity consists of very fine sandy calcareous earth blackened by a small proportion of carbon, but the salt seems to be excellent, and fit for ordinary use as it is. Seeing that on the border of these hills, in Kohát and the Salt-Range, there are two enormous deposits of rock-salt, the latter overlaid by palæozoic rocks and the former overlaid by tertiary strata, there is ample room for conjecture as to the geological position of the Chakmani deposit. There is, however, some ground for surprise at its occurrence there at all, at least if in any quantity, in the fact of the very large trade in salt from Kohát to beyond the Frontier. In the published official account of that trade, a copy of which I have placed on the table, it is represented that Kábul itself is largely supplied with Kohát salt, and that the principal route for the traffic lies up the Kuram valley.

Mr. J. WOOD-MASON exhibited some Butterflies from the Andamans collected by Mr. A. de Roepstorff.

The NATURAL HISTORY SECRETARY also exhibited some butterflies sent from Mussoorie, N. W. Himalayas, by Mr. Cecil Templeton. These butterflies consisted of—

A specimen of the female of *Limenitis Danava*, which sex is rarely seen in collections.

A female of *Neptis zaida*, which it is believed has never before been seen.

Two fine specimens of a large species of *Neptis* probably new to science.

The Natural History Secretary also exhibited a new species of butterfly belonging to the family *Morphidæ* from Sibsagar collected by Mr. S. E. Peal.

The name of this new butterfly is *Æmona Pealí* closely allied to *Æ. Amathusia*, but differing therefrom in the arched instead of sinuous-concave outer margin of the forewing, and in other points which will be found fully

described in the paper to be published with coloured illustrations in the Journal.

The following papers were read—

1. *Essay on the Súryaprajñápti.*—*By* DR. G. THIBAUT, *Principal, Benares College.*

(Abstract.)

The *Súryaprajñápti* is a well-known work on the cosmological and astronomical system of the Jains. But until recently our knowledge of that system was very limited, and founded only on the usual references made to the Jain doctrines by orthodox Hindú writers on Astronomy. The system was principally known as containing the peculiarly strange doctrine of the existence of two suns, two moons and a double set of constellations. In 1878 Prof. A. Weber published a short summary of the Súryaprajñápti, from which it appeared that the Jain system was not so fantastical as it might have been expected and, at all events, was intimately related to the ordinary system prevalent all over India, before it came under the influence of Greek science. The object of the present Essay is, to submit the Súryaprajñápti to a renewed, detailed investigation, in order to accurately establish the points of agreement as well as those of difference between the astronomical system of the Jains and the others generally accepted in India.

This paper will be published in the Journal, Part I.

2. *First List of Diurnal Lepidoptera inhabiting the Andamans based upon a collection made during the months of May and June, by* MR. A. DE ROEPSTORFF.—*By* J. WOOD-MASON, and L. DE NICÉVILLE.

This paper will be printed in the Journal, Part II.

Library.

The following additions have been made to the Library since the Meeting held in June last.

Transactions, Proceedings and Journals,

presented by the respective Societies and Editors.

Berlin. K. preussische Akademie der Wissenschaften,—Monatsbericht, July 1879, January and February 1880.

July, 1879. *Pringsheim.*—Ueber Lichtwirkung und Chlorophyll-Function in der Pflanze. *Virchow.*—Beobachtungen des Hrn. J. M. Hildebrandt auf Madagascar. *Olshausen.*—Ueber die Umgestaltung einiger semitischer Ortsnamen bei den Griechen. *Vogel, H. W.*—Ueber die Spectra des Wasserstoffs, Queck silbers und Stickstoffs. *Kaupert.*—Ueber die Einwirkung des Phosphorpentachlorids auf Senföle und verwandte Körper. Ueber die Methylpyrogallusäure und über die Bildung des Pittakalls. Ueber die volumetrische Aequivalenz von Sauerstoff und Chlor. *Schröder.*—Das Kâṭhakam und die Mâtrâyaṇî Samhitâ. *Sybel.*—Zwei Lehrer Friedrich Wilhelms III in der Philosophie. *Martens.*—Uebersicht der von Hrn. Peters von 1843 bis 1847 in Mossambique gesammelten Mollusca. *Galle*, und *V. Lasaulx.*—Bericht über den Meteorsteinfall bei Gnadenfrei am 17 Mai 1879.

January, 1880. *Siemens.*—Ueber die Abhängigkeit der Elektrischen Leitungsfähigkeit der Kohle von der Temperatur. *Hofmann.*—Ueber die Einwirkung des Schwefels auf Phenylbenzamid. *Peters.*—Mittheilung über die von Hrn. Dr. F. Hilgendorf in Japan gesammelten Chiropteren. *Weber.*—Ueber zwei Parteischriften zu Gunsten der Maga, resp. Çâkadvípíya Brâhmaṇa. *V. Lingenthal.*—Mittheilung über eine Handschrift. *Goldstein.*—Ueber die Entladung der Elektricität in verdünnten Gasen. Ueber elektrische Lichterscheinungen in Gasen.

February, 1880. *Kronecker.*—Ueber die Irreductibilität von Gleichungen. *Peters.* Ueber eine neue Art der Nagergattung *Anomalurus* von Zanzibar. *Oppolzer, Th. von.*—Ueber die Sonnenfinsterniss des Schuking. *Bernstein.*—Ueber den zeitlichen Verlauf der elektrotonischen Ströme des Nerven. *Vögel, H. W.*—Ueber die neuen Wasserstofflinien, die Spectra dar weissen Fixsterne und die Dissociation des Calciums. *Quincke.*—Ueber elektrische Ausdehnung. *Hildebrandt.*—Die Berginsel Nosi-Kómba und das Flussgebiet des Semberáno auf Madagascar. *Peters.*—Mittheilung über neue oder weniger bekannte Amphibien des Berliner Zoologischen Museums. *Rammelsberg.*—Ueber molekulare Erscheinungen am Zinn und Zink.

Bombay. The Indian Antiquary,—Vol. IX, Parts 97 and 98, June and July 1880.

June. *Beal, Rev. S.*—The Sûtra called Ngan-shih-Niu, *i. e.*, Silver-White Woman. Succession of Buddhist Patriarchs. *Walhouse, M. J.*—Archæological Notes. *Bhagvánlál Indraji.*—The Saiva Parikramâ. *Sandford, W.*—Account of Excavations made near Manikyala, in the Panjab. *Jacobi, Dr. H.*—

On Mahâvîra and his Predecessors. *Bhagvânlâl Indraji*, and *Bühler, Dr. G.*—Inscriptions from Nepal.

Bordeaux. Société de Géographie Commerciale,—Bulletin, Nos. 10 and 11.

Boston. Society of Natural History,—Memoirs, Vol. III, Part 1, Nos. 1 and 2.

No. 1. *Minot, C. S.*—On *Distomum Crassicolle:* with brief notes on Huxley's proposed classification of worms.

No. 2. *Scudder, S. H.*—The Early Types of Insects: or the origin and sequence of insect life in palæozoic times.

———. ———. Proceedings,—Vol. XIX, Parts 3 and 4; Vol. XX, Part 1.

Part 3. *Scudder, S. H.*—An Insect Wing of Extreme Simplicity from the Coal Formation. *Morse, E. S.*—Remarks on *Lingula*, and Japanese Pottery. *Scudder, S. H.*—*Rachura*, a new Genus of Fossil *Crustacea*.

Part 4. *Scudder, S. H.*—Note on Dimorphism in Acrydians. *Wilder, Prof. B. G.*—Aëreal Respiration in the Mud Fish. An apparatus to illustrate the action of the Diaphragm in Respiration.

No. 1. *Hagen, Dr. H. A.*—Museum Pests observed in Cambridge. Larvæ of Insects discharged through the Urethra. *Parker, A. T.*—Experiments on Spontaneous Generation.

Calcutta. Geological Survey of India,—Memoirs, Vol. XV, Part 2. *Griesbach.*—Geology of the Ramkola and Tatapani Coal-Fields.

———. ———. ———. Palæontologia Indica,—Series X, Indian Tertiary and Post-Tertiary Vertebrata, Vol. I, Parts 4 and 5.

Part 4. *Lydekker, R.*—Supplement to Crania of Ruminants.

Part 5. *Lydekker, R.*—Siwalik and Narbada Proboscidia.

Series XIII. Salt Range Fossils: by Dr. W. Waagen.

1. Productus-Limestone Fossils. 2. Pisces—Cephalopoda: Supplement. Gasteropoda.

———. Mahábhárata,—No. 47.

Genoa. Museo Civico di Storia Naturale,—Annali, Vols. IX—XIV.

Vol. IX. *Pavesi, J.*—Studi anatomici sopra alcuni uccelli. *Thorell, T.*—Descrizione di alcune specie di Opilioni dell' Arcipelago Malese appartenenti al Museo Civico di Genova. *Sharp, D.*—Description of a new species, indicating a new genus, of Coleoptera. *Chapius, F.*—Cryptocéphalides inédits du Musée Civique de Gênes. *Gestro, R.*—Aliquot Buprestidarum novarum diagnoses. Descrizione di una nuova specie del genere curis, della famiglia dei Buprestidi.

Vol. X. *Harold, E. de.*—E'numération des Lamellicornes Coprophages rapportés de l' Archipel Malais, de la Nouvelle Guinée et de l' Australie boréale par M. M. J. Doria, O. Beccari, et L. M. D'Albertis. *Thorell, T.*—Studi sui ragni malesi e papuani. I. Ragni di Selebes raccolti nel 1874 dal Dott. O. Beccari. *Gestro, R.*—Descrizioni di alcuni Coleotteri e diagnosi di quattro specie nuove esistenti nel Museo Civico di Genova.

Vol. XI. Crociera del Violante comandato dal Capitano-Armatore Enrico d' Albertis durante l'anno 1876.

Vol. XII. *Rondani, C.*—Hippoboscita exotica non vel minus cognita. *Pavesi, P.*—Seconda contribuzione alla Morfologia o sistematica dei Selachi. *Dubro-*

ny, A.—Essai sur le genre *Chelidura*. *Bellonci, G.*—Morfologia del sistema nervoso centrale della *Squilla mantis*. *Issel, A.*—Appunti paleontologici.—III Ritrovamento del genere *Machaerodus* sugli Appennini Liguri.

Vol. XIV. *Issel, A.*—Appunti paleontologici. IV. Descrizione di due denti d'Elefante, raccolti nella Liguria occidentale. *Salvadori, T.*—Catalogo di una collezione di uccelli fatta nella parte occidentale di Sumatra dal Prof. Odoardo Beccari. *Dubrony, A.*—E'numération des Orthoptères rapportés par M. M. J. Doria, O. Beccari, et L. M. d' Albertis des régions Indienne et Austro-Malaise. *Vinciguerra, D.*—Appunti ittiologici sulle collezioni del Museo Civico di Genova. I. Enumerazione d'alcune specie di pesci raccolti in Sumatra dal Dott. O. Beccari nell'anno 1878 *Oberthur, R.*—Notes sur quelques Coléoptères récoltés aux îles Sanghir par les chasseurs de M. A. A. Bruijn et description de trois espèces nouvelles.

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No. 21. *Faye.*—Sur les variations séculaires de la figure mathématique de la Terre. *Berthelot.*—Sur les mélanges refrigerants formés par un sel hydraté. *Debray, H.*—Actions des acides sur les alliages du rhodium avec le plomb et le zinc. *Callandreau, O.*—Sur les transcendantes qui jouent un rôle fondamentale dans la théorie des perturbations planétaires. *Bruno, F. de.*—Sur un théorème général dans la théorie des covariants. *Dedekind, R.*—Sur la théorie des nombres complexes idéaux. *Appell.*—Intégration de certaines équations différentielles à l'aide des fonctions θ. *Paige, C. le.*—Sur l'élimination. *Mouchot, A.*—Utilisation industrielle de la chaleur solaire. *Destrem, A.*—Combinaisons des alcools avec la baryte et la chaux ; produits de la décomposition, par la chaleur, de ces combinaisons. *Nivet.*—Des réactions qui se produisent entre les sels ammoniacaux et le carbonate de chaux. *Reynier* et *Richet, Ch.*—Expériences relatives an choc péritonéal. *Couty.*—Sur la forme et le siège des mouvements produits par l'excitation corticale du cerveau. *Héger, P.*—Sur le pouvoir fixateur de certains organes pour les alcaloïdes introduits dans le sang qui les traverse. *Pietra-Santa, de.*—Découverte de vaccin "horse-pox." *Phipson, T. L.*—Sur un phénomène de sensibilité observé dans l' Acacia. *Vasseur, G.*—Sur les terrains tertiaires de la Bretagne. Environs de Saffré (Loire-Inférieure).

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idées cosmogoniques de Kant, à propos d'une réclamation de priorité de M. Schlötel. *Grimaux, E.* and *Adam, P.*—Synthèse de l'acide citrique. *Béchamp, A.*—Recherches sur les matières albuminoïdes du cristallin au point de vue de la non-identité de celles qui sont solubles avec albumine du blanc d'œuf et du sérum. *Novi, G.*—Sur l'emploi des sables volcaniques dans la traitement des vignes attaquées par le *Phylloxera*. Un rapide aperçu des matières contenues dans l'Ouvrage de M. Alph. de Candolle, intitulé : "La Phytographie, ou l'art de décrire les végétaux." *Radau, R.*—Sur les réfractions des Bessel. *Picard, E.*—Sur une extension aux fonctions de deux variables du problème de Riemann relatif aux fonctions hypergéométriques. *Mathieu, E.*—Sur l'équilibre d'élasticité d'un prisme rectangle. *Ader.*—Téléphone à surexcitation magnétique. *Macé, J.* and *Nicati, W.*—E'tude de la distribution de la lumière dans le spectre. *Leroy, C. J. A.*—Sur l'astigmatisme. *Loguigrine, W.*—Chaleur dégagée dans la combustion de quelques alcools isomères de la série grasse ainsi que l'œnanthol. *Ditte, A.*—Sur les mélanges réfrigérants formés de deux sels cristallisés. *Kessler.*—Hydrate hydrofluosilicique cristallisé. *Marangoni, C.*—Fonctions de la vessie natatoire des Poissons. *Gérard, R.*—Recherches sur la structure de l'axe au-dessous des feuilles séminales chez les Dicotylédones. *Magitot, E.*—De la structure et du développement du tissu dentinaire dans la série animale. *Herrmann, G.* and *Desfosses, L.*—Sur la muqueuse de la région cloacale du rectum. *Berlioux.* Sur le voyage d'exploration de M. Rohlfs dans le Sahara oriental.

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Franck, A.—Histoire de de la philosophie de France. *Egger, E'.*—La poésie de Pindare et les lois du lyrisme grec. *Quatrefages, A. de.*—Les crânes finnois. *Gruyer, A.*—Le Jouer de violon, par Raphaël. *Esmein, A.*—Un traité de droit syro-romain au cinquième siècle.

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No. 49. *Paris.*—Les Extincteurs. *Huxley, Prof. Th.*—Organes des sens et fonctions de reproduction de l'écrivisse. *Dastre.*—Vie et travaux de Glisson d'après M. Marion. *Legoyt.*—Statistique du suicide.

No. 50. *Moutier. J.*—La loi de Dulong et Petit. *Tollin, H.*—Michel Servet.

Books Purchased.

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Entomologist's Monthly Magazine. Vols. I—XIII. 8vo., London, 1864-77.

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GOLDSTÜCKER, PROF., Literary Remains of the late. 2 Vols. 8vo., London, 1879.

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NEWCOMB, SIMON. Astronomical Papers prepared for the use of the American Ephemeris and Nautical Almanac. Vol. I, Part 1. Tables of Eclipses. 4to., Washington, 1879.

PAVIE, THEODORE. Krichna et sa doctrine. Traduit sur le manuscrit Hindoui de Lalatch Kab.

REGNAUD, P. Le Chariot de Terre cuite (Mricchakatika), drame Sanscrit attribué au roi Cûdraka, traduit et annoté des scolies inédites de Lallâ Dîkshita. 4 Vols. 12mo., Paris, 1876-77.

REGNAUD, P. Les stances érotiques morales et religieuses de Bhartrihari, traduites du Sanscrit. 12mo., Paris, 1875.

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WILLIAMS, PROF. MONIER. (Non-Christian Religious Systems.) Hinduism. 12mo., London, 1878.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR AUGUST, 1880.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 4th August, at 9·15 P. M.

H. B. MEDLICOTT, Esq., F. R. S., in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the authors,—(1) Valuations of coins which are now, or have recently been current, by Col. J. F. Tennant, (2) The Indian Swastika and its Western Counterparts, by E. Thomas, (3) Results of Meteorological Observations, 1879, at G. V. Juggarow's Observatory, Daba Gardens, Vizagapatam, by A. V. Nursingrow, and (4) Lyttoniana, Vol. I, by Adharlal Sen.

2. From the Batavian Observatory,—Rainfall in the East Indian Archipelago, first year, 1879, by Dr. P. A. Bergsma.

3. From P. W. Sheafer, Esq.,—Diagram of the Progress of the Anthracite Coal Trade of Pennsylvania, with statistical tables &c.

4. From the Government of the Netherlands,—Bôrô-Boudour dans l'île de Java, by F. C. Wilsen and J. F. G. Brumund.

5. From the Bengal Secretariat,—The Flora of British India, Vol. II by Sir J. D. Hooker.

6. From the Marine Survey Department—Chart of Port Mouat in South Andaman Island.

The following Gentlemen, duly proposed and seconded at the last Meeting, were balloted for and elected Ordinary Members—

Pandit Mohunlall Vishnulall Pandia.

The Hon. J. Gibbs, C. S. I.

Raja Siva Prasad, C. S. I.

J. A. Brown, Esq., C. S.

W. Lambe, Esq., C. S.

H. W. W. Reynolds, Esq, C. S.

The following Gentlemen are candidates for election, and will be balloted for at the next meeting of the Council.

1. Richardson Walter Nicholson, Esq., Ghazipur, proposed by H. Rivett-Carnac, Esq., seconded by Alex. Pedler, Esq.

2. Lieut.-Col. M. G. Clerk, Benares, proposed by H. Rivett-Carnac, Esq., seconded by Alex. Pedler, Esq.

3. Babu Benod Behary Mullick, proposed by Babu Protapa Chundra Ghosha, seconded by Dr. R. L. Mitra.

4. Babu Sib Chunder Nag, Personal Assistant to the Commissioner of Chittagong, proposed by Babu Adharlal Sen, seconded by Babu Umesh Chunder Dutt.

5. Khalif M. Hussan, proposed by Moulvie Kabiruddin Ahmad, seconded by Alex. Pedler, Esq.

The PRESIDENT announced that, in accordance with Rules 37 and 38 of the Society's Bye-Laws, the names of the following Gentlemen had been posted up, as Defaulting Members, since the last Monthly General Meeting, and would now be removed from the List of Members, and published in the Proceedings.

J. F. Baness, Esq.
W. Porter, Esq.
P. Dejoux, Esq.
J. S. Gunn, Esq., M. B.

The COUNCIL announced that Dr. T. R. Lewis had tendered his resignation as Member of the Council and Trustee of the Indian Museum, and that Mr. H. F. Blanford had been re-elected Member of Council.

The SECRETARY announced that H. E. the Viceroy LORD RIPON had consented to accept the office of Patron of the Society.

Dr. A. F. RUDOLF HOERNLE exhibited some photographs of groups of Aryans and non-Aryans from the so-called "neutral zone" on the North Western frontiers of India, sent by Dr. G. W. Leitner, Principal of the Government College at Lahore. The photographs were taken at Lahore, and represent men from Hanza, Nagyr, Chitral, Gilgit, Kolab, Gabrial and Badakhshan.

Dr. RA'JENDRALA'LA MITRA exhibited a facsimile of a Chinese inscription forwarded to him by Mr. Barton, Magistrate and Collector of Gayá. The stone which bore the record was found by Mr. Beglar in one of the rubbish mounds around the great temple at Buddha-Gayá at a depth

of about 12 feet from the top of the mound. It had evidently been set up by a Chinese pilgrim, very much in the same way in which the Burmese inscriptions have found their way to the place. Dr. Mitra had sought the aid of some Chinamen of Cossitollah to decypher the monument, but had failed, the interpretation given him being of a character which could not be verified by him. He had been told that the record was a thousand years old. If so, it would be of the time of Hiouen Thsang; but it may be older still, and may be the identical stone which Fa Hian is said to have set up at Buddha-Gayá. Dr. Mitra intends to send the facsimile to the Rev. S. Beal, London, to be decyphered.

Dr. Mitra also submitted the following notes on two copper-plate inscriptions found in Sylhet and forwarded to him by Mr. Luttman-Johnson.

I am indebted to Mr Luttman-Johnson, Deputy Commissioner of Sylhet, for facsimiles, in duplicate, of two copper-plate grants, which had been discovered several years ago, but lately brought to notice by Paṇḍit Śrínívása Śástrí, brother of the renowned Sanskrit scholar and poet, Ramá Bái. Bábu Rájanáráyaṇa Deva Chaudhuri, in whose estate they were discovered, says "they were found about 15 years ago, in a tillah in Bhátárá, and dug up from a depth of about 8 feet, in the course of removing old bricks from the foundation of an ancient building." The tillah stands by the highway, at a distance of a mile to the south-west of a market called Bhátárá bazar, and close by a hill also named Bhátárá. Some call it Naolar tillah, others, Iṭer tillah (brick mound). According to tradition the tillah is the palace which belonged to Rája Gauragovinda *alias* Govinda Siñha. He was a prince of great renown, and much devoted to Vedic rites. A tillah at a short distance is shown in the centre of which he used to perform the homa rite, in a large square vat lined with bricks. This is called Homer Tillah. Close by, there is a place which bears the name of Dakshiṇá Káṇḍa, and this is said to be the place where he distributed alms, after performing the rite. A large tank in the neighbourhood is also attributed to him. The prince was overthrown by Sháh Jellál, *alias* Jelál-uddín Khány, who, following the footsteps of his predecessor Mulk Yuzbek, led his army to the eastern parts of Bengal, invaded Sylhet in 1257 A. D., and brought some of the petty independent rájás under his control. His success, however, was short-lived, for he was suddenly called back to defend Gaur from the invasion of Irsilán Khán, and soon after killed in battle. Bábu Jagachchandra Deva Chaudhurí gives the following details of the discovery: "When in 1279 (B. S.) one of my tenants, named Shaikh Kátái, was engaged in digging out bricks from this tillah, he found two copper-plates with letters engraved on them. These were taken by my brother Káśichandra Rai Chaudhuri (now deceased), and

were with us for years together, until about two years ago Maulavi Hámid Bakht Majumdár took them from me. The Maulavi made them over to the Deputy Commissioner in whose office they are now preserved."

Each grant is inscribed on two quadrangular plates of copper, having a projection, on the top of which a hole was intended to be bored, but this was not done. One set is much larger than the other, the former measuring $12\frac{1}{2} \times 11$ inches, and the latter $8 \times 6\frac{1}{2}$ inches.

The larger set has 27 lines of inscription on the first plate and 28 on the second. The small one 16 lines on each plate. The letters on the two are of the same type, a cross between the Kuṭila and the Bengali, and, on the whole, in a fair state of preservation.

No. I opens with a salutation to Śiva, and then gives a genealogy of four kings who are said to have belonged to the race of the moon. The founder of the line was Navagirvána, in whose favour the panygerist has nothing to say beyond his having been the issue of prosperity personified. His son Gokula Deva claims distinction for being the grandfather of the reigning king. His son was Nárávaṇa, and from him descended Govinda *alias* Keśava, who granted, for the adoration of a lingam of the name of Vaṭeśvara, whose temple stood in Haṭṭapáṭaka (the great fair), probably the Bháṭárá bazar of the present day, lands to the extent of 375 plough measures, 296 houses, and a great number of slaves. One of the epithets used for Śiva is *Śríhaṭṭeśvara*, or the lord of Sylhet.

The lands and houses given were scattered in different villages, and their names as also the extent of land in each village, are given in detail, but from want of local knowledge I am not in a position to identify them.

The most remarkable peculiarity in the record is the use of the word *hala* "a plough" for indicating a measure of land. I do not remember to have noticed it in any other land-grant that I have seen. In old Smṛitis it is, however, often referred to. Thus in Manu, (VII, 119), "Let the lord of ten towns enjoy the produce of two plough-lands; the lord of twenty, that of ten plough-lands; the lord of a hundred, that of a village or small town; the lord of a thousand, that of a large town." The word used is *kula*, which in ordinary Sanskrit means a herd, but the commentator Kulluka Bhaṭṭa explains the term by the words "as much ground as can be tilled with two ploughs each drawn by six bullocks."*

This technical meaning is recognized by Hárita, who says, "the *hala* (plough) drawn by eight bullocks is the most virtuous, (*dharmahala, i. e.*, the best); that of six bullocks belongs to men of consequence; that of four for ordinary householders; and that of two for Bráhmaṇicides (for whom bare subsistence is all that is needed)."†

* तथाविधहलद्वयेन यावती भूमिर्वाह्यते तत् कुलमिति वदन्ति ।

† अष्टागवं धर्महलं षड्गवं जीवनार्थिनां ।
चतुर्गवं गृहस्थानां द्विगवं ब्रह्मघातिनाम् ॥

In the Smṛiti of Parásara the verse occurs with slight variations, changing "householders" into wicked men, and "Bráhmanicides" into tauricides.*

I have failed to find out the exact area of the land the term indicated. But looking to the original meaning of the word *kula* I am disposed to think that it is closely related to the Anglo-Saxon *hyde* and its Latin congener *hida* or *hyda*, with its various corruptions in most of the modern languages of Europe. It originally meant *as much land as could be tilled with one plough*, and was thus equal to a *kula* of Manu and a *hala* of Hárita, though subsequently it came to mean a *family possession*, and has been differently estimated by different authors from 60 to 120 acres. Hume has a passage quoted from Spelman, which reads very like a paraphrase of Manu's verse, it runs thus: "Four hydes made one knight's fee, the relief of a barony was twelve times greater than that of a knight's fee," (*History of England, II*, p. 116.) I have nowhere seen any attempt made to account for the use of the word hyde meaning *cutis*, to indicate a plough; I fancy it is a metonymy for a bullock which stands for a plough. This idea, however, had been long ago forgotten, for even in the Greek story of Dido, when she asked for a hide of land, she was understood to mean as much land as could be covered by a hide, and she cut up the hide into thongs to cover a large area to found the city of Byrsa: no idea of a plough or bullock was then entertained. It may be conjectured that a bag made of an entire hide was naturally a hide, and as much land as could be cultivated by seed contained in that bag was also called a hide; but there is no proof of any kind to support it, and it must therefore be rejected as unwarrantable. Anyhow there is sufficient similitude between *hala* and *hide* to suggest the idea of a common origin.

The date of the record has been read by Paṇḍit S'rínivása S'ástrí, to be the year 2928 of the era of the first Paṇḍava king: पाण्डवकुलादिपाब्दं सं २९२८. But in the original the first figure is very unlike the third, and has been moreover scratched over, and is abundantly doubtful. The second is also open to question. I am disposed to take the first for a 4, and the second for 3, which would make the date equal 4328 = A. D. 1245, or about the time when Sháh Jellál invaded Sylhet. That the Govinda of the Tillah is the same with that of the record I have no reason to doubt.

No. II is a Vaishṇavite record. It opens with a salutation to Náráyaṇa, the husband of Kamalá; and gives a list of four kings, who belonged to the lunar race. The first was Gokula, who is said to have been as munificent as the *kalpa* tree. His son was Náráyaṇa, who was followed by

* छलनष्टगवं धर्म्मं षड्गवं मध्यमं स्मृतं।
चतुर्गवं क्षमंसानां द्विगवं क्षपधातिनाम्॥

Keśava Deva, who dedicated a temple to the destroyer of Kañśa, and performed the rite of weighing himself against gold, silver and other articles which he presented to Bráhmaṇs. His son was Íśána Deva. He erected a lofty temple for the enemy of Madhukaitabha, a form of Vishṇu, and, by the advice of his minister Vanamálí Kara, a Vaidya by caste, and the concurrence of his commander-in-chief Víradatta, presented two ploughs of land for its support. The deed was engraved by one Mádhava of the Dása tribe, on the 1st of Vaiśákha in the year 17. The word used for the year is स०, which is an abbreviation of Samvat, a word ordinarily used for the era of Vikramáditya, but not unoften also for any era, and here it is obviously intended for the era of the king's reign.

It is obvious that the first prince of this plate is the same with the second of the first plate, the next two are likewise the same, for there is no reason to doubt that Keśava of the second plate is the *alias* of the Govinda of the first grant, and the new name Íśáṇa Deva, is the fifth from Navagírváṇa. The genealogy will accordingly stand thus—

1. Navagírváṇa *alias* Kharaváṇa.
2. Gokula.
3. Náráyaṇa.
4. Keśava *alias* Govinda.
5. Íśána.

These rájás were sovereigns of Káchár, and professed to be of the dynasty of Ghaṭotkacha, son of Bhíma, one of the Páṇḍu brothers, by Hiḍimbá, the daughter of an aboriginal cannibal chief. It is extremely doubtful, however, if the Páṇḍus ever came so far to the East.

If the date assigned to the first plate be accepted, the second will be a little over 17 years after it, or in the last quarter of the 13th century.

Translation of Inscription, No. I.

Om! Salutation to Śiva. Salutation be unto him, who is the lord of the three worlds, by whose body, represented by the earth,* is this universe upheld, who is known as the supreme lord, and as one who, though verily one alone, has the threefold names of Brahmá, Upendra, (Vishṇu) and Maheśa, and as the receptacle of the three qualities, the leader of creation.

2. He prospers—he the crown-jewel on the head of the destroyer of Tripura, the silver pitcher for the bath of the mistress of Cupid, the whetstone for sharpening the arrows of the flowery-bowed god, the cool-rayed ornament of night.†

* The body of Śiva is described to represent the earth, water &c., in eight forms. सर्व्वाय क्षितिमूर्त्तये नमः &c.

† Epithets for the moon.

3. In his race were born many valorous kings whose eulogiums are extant on the land of Bharata.

4. Now was born the noblest of kings Navagírvána,* (the new god,) of fierce arrow, (*kharaváṇa*) of great renown, the issue of the goddess of royal prosperity.

5. His son, the king of the name of Gokula Deva, was the grandfather of the (reigning) king. It is wonderful that the sunlight of his glory caused numbness in inimical kings (instead of exciting vivacity as sunlight should).

6. From him descended king Náráyaṇa, who, like Lakshmí, was churned from the ocean of antagonistic kings, with the Mandára mountain of valiant arms, and who rivalled the Lord by taking his shelter in enjoyment (nanda).†

7. Of him was born Keśava Deva of unmeasured hymn of merit and glory, whose feet were decorated with the jewels of royal crowns, who was the ornament of earthly sovereigns, the destroyer of rival kings, even as Govinda‡ himself.

8. He prospers—he the ultimatum of wonderful manliness, the abode of fame, the asylum of beauty, the dwelling place of all kinds of learning, the shelter of justice—he the centre of all light, the source of charity, the home of enjoyment, the jewel of all speech, the store-house of goodness, the personification of all good qualities.

9. He, having by his arms protected the land of dependant kings, became the protector of the good,§ and revived the festivity of the destroyer of Kañśa. This Keśava Deva (*alias* Govinda), who had whirled his discus at his enemies, has, through his anger, brought to an end all the children of the race of his antagonists; (or who has destroyed the Śiśupála of his enemies).‖

* The words Navagirváṇa and Kharaváṇa are so placed that either of them may pass for a proper name, or both may be epithets. I take at random the first for the proper name. The second may be an *alias*.

† There is a *double entendre* here in the word Nanda. Even as Lord Kṛishṇa took shelter with Nanda, the cowherd, so did he betake to nanda (pleasure).

‡ The god Kṛishṇa. The two words Keśava and Govinda have been so introduced as both may stand for proper names, one in illustration of the other. Probably both were the names of the same person, and the poet has availed himself of the fact to play upon them.

§ *Sadvrindávana.* There is a play upon this word which once means the town Vrindávana near Mathurá where Kṛishṇa dwelt in his childhood, and once the good people—*sat* good, and *vrinda* collection.

‖ Śiśupála, king of Chedi, was an enemy of Kṛishṇa, and killed by him in a single combat. The word means a number of children—*śiśu* "child" and *pála* "a herd."

10. He has, by the vigour of his arms, brought this earth under one royal umbrella, wishing not to allow the existence of any foreign possession.

11. He has appointed his hands to replace the Kalpa tree, his valour to replace the sun, his fame to serve the purposes of the moon, and his arms to supply the place of Ananta (in upholding the earth). His eyes alone have the courage to override his ears (*i. e.*, his eyes were so long that they extended as far as the ears; or that his virtuous course—the course founded on the observance of Vedic rules—none dared to disturb).

12. Having effected the gratification of all well-disposed people, having, by the play of his sword, subjugated all sides, and having cast far away all other kings, this king governs as the chief of eastern kings (or greater than all former kings).

13. His well-earned white glory, bright as the moon, has made the earth white; it has blighted the bud of the inimical lotus; it has blown the lily of enjoyment. Is it giving delight by moving on constantly, or by remaining fixed? Is it the result of any cause, or is it eternal? It is wonderful.

14. The unrivalled fire of the king's vigour flourishes How wonderful it is? It becomes manifest by the vapour of inimical kings, (though vapour is no characteristic sign of fire); it is not blown out by the tears of enemies (though ordinary fires are extinguished by water); it causes torpidity in hostile potentates, (while ordinary fires dispel torpidity). It has enveloped the quarters of the earth (even as ordinary fires envelope wood; a play upon the word *kásháṭha*, which means both wood and quarters). It licks the sky (even as the flame of a large fire does).

15. That king, engaged in battle, caused two prominent things to be bent low by his two qualities, (*guṇa* strings)—by one string his bow, by the other, perceivable by the great, the host of his enemies.

16. By the glory of that king, bright as the rays of the laughing moon, and of illimitable might, the whole earth has been overpowered—a glory that has leaped across many oceans.

17. Now, Bhagaván Vaṭeśvara, of form without a beginning, the source of the earth, the lord of the three worlds, unwilling to abide in Kailáśa, descended on earth and dwelt at Haṭṭapáṭaka.

18. That king, whose feet are emblazoned by the crest-jewels of kings, and who is the noblest of all kings, presented to that crescent-crested divinity, in different villages,

19. Lands to the extent of 375 plough measures and 296 houses.

20. He, the devotee of Śiva, gave to Śiva, the lord of Śríhaṭṭa, many slaves and men of various races. In Cháṭápaḍádeva 35 ploughs, and houses 110. In Baḍagráma, ploughs 13. In Mahavápura, plough 1. In Haḍhí-

thánáka, ploughs 7, houses 6. In the north of Degigáñ, plough 1. In Navapanchana, ploughs 5, house (?). In Áyatanika, ploughs 7. In Siḍḍava, house 1. In Amanáṭa Bhavika, ploughs 6 (?) In Guḍhavayika, houses 3. In Káṭáváchha, ploughs 3. In Koṇárka (some epithets unintelligible), house 1. In the town of Yithávi, ploughs 17, houses 4. In Nenrivatága, houses 3. In Oḍhátithárka, ploughs 3, houses 11. In Kaiváma, ploughs ?, house 1. In Bálusigráma, ploughs 5. On the west of Navachha, ploughs 5, houses . In Athinaháṭika, ploughs 5, houses 8. To the south of Kaḍhaḍhiyá, to the east of Gosyayá, to the north of Gováṭa, to the west of Babani, ploughs, 18. To the south of the river Savagá, ploughs 5, houses 3. To the north of that river, ploughs 35, houses 13. To the north of that river and the east of Váṭisasta, house 1. To the north of that river, west of Ghaṭibhú, and south of Sarvabhú, ploughs 7. To the north of the river Kániyání and the east of Yegamyaganiyá, ploughs 8½, houses 7. To the south of the river, the east of Thabasonti and the west of Bháskaraṭenkuri, ploughs 15, houses . In the two villages of Náṭayána within Jagáyá, ploughs 5, houses 30. In Sanágayaḍáka, to the east of Amikáthi, and the west of Ságara (sea ?), ploughs 10. To the south and north of Kániyáni river, ploughs 8½. To the south of the Nágáyí river, ploughs 6, houses 10. In Bhogáḍhaopáda, to the north of Báḍhaḍha (a hollow), ploughs 9, houses 9. To the west of Tathogásana and the north of Haṭṭavava, ploughs 7, houses 10. In Baḍasochasa, to the south of Sátakopá, ploughs 10. In Chedgambuḍika, ploughs 3, house 1. In Áḍánakáthi, houses 8 * * * *. In Nadyánika, ploughs 8 house 1. In Bhúka, to the east of Upaṃsivo and the north of Athávi, ploughs 80, houses 13. In the village of Naḍakuṭi, houses 8. In that village to the north of the river Thága, houses 6. In Bhúka, to the east of Gosvepapota, to the north of the cattle-path, to the south of Háḍi Ganga (tank) to the west of Dhanukundoḍhi, ploughs 5. In Pochhániyá, ploughs 10. In Devagásana, ploughs 5. In—to the north Jopábasuyá, house 1. In Bhátaghaḍa 10, also house 1. In Badagopagadá, 1. Also there—house for—7.

In Bháṭapadá————(unintelligible) house 1,————house ————houses 5. Also in Nidova—cooking houses 5. In Nido—cooing houses 3. In Bháṭapadá—houses for cooking—3. In the town Piápi houses for—3. In the village of Sihádava—cattle-shed 1 (a unintelligible) are given. By Sagara and many other kings lan been given; to whomsoever the land belongs for the time being belongs the reward (of such gifts). Whoever resumes land, whe by himself or by others, becoming a worm in ordure, rots th with his ancestors. In the era of the first king of the Páṇḍav

Transcript of Inscription No. I.

१। ॐ नमः शिवाय ॥ यः कर्त्ता भुवनत्रयस्य तनुभिर्विश्वं सृष्टिस्थादिभिर्यस्येदं म्रियते य ईश्वर इति ख्यातो-

२। भवन्नापरः। यः संज्ञात्रयमेक एव भजति त्रैगुण्यभेदाश्रितो ब्रह्मोपेन्द्रमहेश्वरेति जगतामीशाय

३। तस्मै नमः ॥ त्रिपुरहरशिरःकिरीटरत्नं स्मरयुवतेरभिषेकरौप्यकुम्भः कुसुमविशिखबाणशाणचक्रं

४। जयति निशातिलकमुषाररोचिः ॥ वंशेस्य भूमिपतयः कति ते निष्पारपौरुषा जाताः। येषां यशः-

५। प्रशस्तिर्भुवि भारतसंहितैवास्ति ॥ अथ विश्रुतप्रभावः प्रभवः स्वच्छराज्यकमलायाः। समजनि नवगीर्व्वा-

६। णः खरवाणः क्षमाभुजां श्रेष्ठः ॥ तस्यात्मजो राजपितामहोभूत् मही पतिर्गोकुलदेवनामा। यस्य प्रता-

७। पार्कैरुचोपि चिरं दिगन्तरिक्षापतिजाचमुद्राम् ॥ तस्मादमन्दभुजमन्दरमथ्यमानप्रत्यर्थिपार्थिव-

८। समुद्रसमुद्भूतश्रीः। नारायणोऽजनि महीपतिरन्वकारि येन स्वयं स भगवान् वितनन्दकेन ॥ तस्मादसी-

९। मगुणगौरवगीतकीर्त्तिर्भूपालमौलिमणिमण्डितपादपीठः। श्रीमान् क्षितीन्द्रतिलको रिपुराज-

१०। श्रेणी गोविन्द इत्यजनि केशवदेव एषः ॥ यः सीमाद्भुतपौरुषस्य यशसां वामश्रियामाश्रयो विद्या-

११। नां वसतिर्नयस्य निलयो धान्नान्नदेकास्पदं। त्यागस्यायतनं विलासभवनं वाचः-कलानां निधिः।

१२। सौजन्यस्य निकेतनं विजयते मूर्त्तो गुणानां गणः ॥ दोर्दण्डेन समुद्धृतक्षितिभृतां संरक्ष्य गोमण्ड-

१३। लं सद्वृन्दावनसादरेण विदधत् उच्छिन्नकंसोत्सवम्। श्रीमत्केशवदेव एष नियतं चक्रेऽवशेषं यथा य-

१४। स्यैकं शिशुपालमप्यरिकुले चिह्नारिचक्रो नृपः ॥ क्षत्वा येन भुजौजसा वसुमतीमेकातपत्रां मि-

१५। मां लोकेऽस्मिन्नभिलप्यते विजयिनानन्याधिकारस्थितिः। पाणिः कल्पतरोः पदे दिनकृतः क्षत्ये-

१६। प्रतापो यथः श्रीतांशोर्विषये न्यधायि भुजगाधीशाधिकारे भुजः ॥ यस्मिन् शासति निखिलामा-

१७। दिमचीपालदीजया चौणीम्। श्रुतिपथलङ्घनसाहसमासीत् कान्ताहशामेव ॥ अयं सुहृचक्र-

१८। मुदं विभावयन् प्रसाधिताशः करवाललीलया। सुदूरमुत्सारितराजमण्डलो रराज पूर्व्वाचलनिश्चल-

१९। शिरोमणिः॥ करोति धवलं जगत् विनयतेऽरिपद्मोद्गमं तनोति कुमुदं यशः सहश-मस्य च-

२०। न्द्रोदमलं। सितं किमथ रञ्जकं भ्रमदनारतं किं स्थिरं सकारणमिदन्त सत् किमिव नित्यमित्यद्भु-

२१। तम्॥ वार्ध्येकर्व्वीपतीनां यदयमनुमितोऽमूर्च्छितो यद्विपूर्णां कीलालैर्यत्तनोति द्विषद्वनिभुजां-

२२। जाव्यमर्षिविंतानैः। काष्ठानां यद्व्यतीत्य प्रकरमुपययावम्बरं लेलिहानस्तेनाश्चर्य्यैक-सीमा जयति नर-

२३। पतेः कोपि तेजःकृशानुः॥ चौणीभुजा युगपदाहवसङ्गतेन तेनोन्नतद्वयमनाभि गुणद्वयेन एके-

२४। न कार्म्मुकमसीममहःप्रकर्षशंसिन वैरिनिवहः सहसापरेण॥ मन्दीभुजाऽर्जीयत चन्द्र-हासकरेण ते-

२५। नामितविक्रमेण। विलङ्घितानेकपयोधिनेयं स्वेनैव लब्धा यशसा धरित्री॥ अथा-स्ति कैलासनि-

२६। वासनिस्पृहः कृतावतारो भुवि चट्टपाटके। अनादिरूपो जगदादिरप्ययं त्रिलोकना-थो भग-

२७। वान् वटेश्वरः॥ शशिशेखराय तस्मै न्टपशेखररत्नविस्फुरच्चरणः। प्रददौ नाना-ग्रामे निखिलन्टप-

२८। ग्रामणीरेषः॥ अधिकं पञ्चसप्तत्या भूहलानां शतत्रयं। शतद्वयञ्च वाटीनां पञ्चवत्या समन्वितं॥ नाना-

२९। परिजनांस्तस्मै जनजातीरनेकशः। प्रादात् श्रीचट्टनाथाय शिवाय शिवकीर्त्तनः॥ चाटापड़ादेवसत्रे भूह-

३०। ल २५॥ वाटी ११० वड़ग्रामे भूहल १२ मद्दवापुरे वाटी १ चढीयानाके भूहल ७ वाटी ९ देगिग्रामेात्तरे भूहल १ नव-

३१। पश्चने हल ५ वाटी + आयतनीके हल ७ शिडडवे वाटी १ अमनाटे भविके भूहल-९ गुड़ावयीके वाटी २ काटा वाके-

३२। ते भूहल २ आयानिकते बनीघनाकोणार्के वाटी १ धियाधिनगरे भूहल १७ वाटी ४ मेन्द्वयग्रामे वाटी २ योड़ासि-

३३। यार्कें-छतकवभूहल २ वाटी ११ कैयामे हल(?) वाटी १ वालूसीग्रामे हल ५ नव-वाटी-पश्चिमे हल + + + भूहल ५ वा-

con:

२४। टी अथिनहाटीके भूहल ५ वाटी ८ कडडिया दक्षिणे गोस्थया पूर्व्वे गोवटोत्तरे ववनी-
पश्चिमे-

२५। भूहल १८ सवगानयी (दी) दक्षिणे भूहल ५ वाटी २ तथा नद्युत्तरे भूहल २५ वाटी
१२ तथा नद्युत्तरे वाटी-

२६। सस्त पूर्व्वे वाटी १ तथा नद्युत्तरे घटीभूपश्चिमे अर्व्वभूदक्षिणे भूहल ७ कानियानी
नद्युत्तरे येगम्यगणि-

२७। या पूर्व्वे भूहल ८॥ वाटी ७ तथा नदीदक्षिणे अवसोन्तीपूर्व्वे भास्करटेङ्करीपश्चिम
भूहल १५ वाटी +

२८। अगायान्तरे नाटयानग्रामद्वये भूहल ५ वाटी २० सनागयड़ाके अगीकाथीपूर्व्वे साग-
रपश्चिमे भू-

२९। हल १० कानियानीनदीदक्षिणोत्तरे भूहल ८॥ नागायि नदीदक्षिणे भूहल ६
वाटी १० भोगाडत्तवाड-

३०। डोत्तरे भूहल ९ वाटी ९ तथोगासने पश्चिमे हट्टवोत्तरे भूहल ७ वाटी १० सातको-
पादक्षिणे वड़सोच-

३१। स भूहल १० चेङ्गम्बुड़ीके भूहल २ वाटी १ चाडाणकाथीके वाटी ८ भूके + ग + न-
द्यानीके वाटी ८ मे + पवा-

३२। कवाटी १ भूकेऽपंस्विो पूर्व्वे आथावी उत्तरे भूहल ८० वाटी १२ नडकुडीगामे वाटी
८ तथागामे थागन-

३३। दुत्तरे वाटी ६ भूके + गोखेपपोतपूर्व्वे गोपथ + त्तरे चडीगाङ्गदक्षिणे धनकुण्डोडी
पश्चिमे कवगा-

३४। सनहल ५ पोक्षानिया अथानि उताक भूहल १० + द्य देवगासन पूर्व्वे भूहल ५
वो वाडडा दक्षि-

३५। णे जोगावनिया उत्तरे वाडी १ भाटपडाके केदाकादिवावगूढ १० तथा केतीस्तताका-
दि गोपगूड

३६। तथा व + पाकादि ते गडड तथाकेकास्य नोविन्दाग्टह १ वड़गामे गोपगदा १
तभा के आवपा-

३७। नाकादिवावगूह ७ डोगाडत्तावानि निभावगूथ। ते गूड्ड भाटपडाछढाथाना। न +
उगढाकानि गूड़

३८। भाट पड़ाववपथ। तक्पथाननि विवाकवाकादिसाना गूड्ड भाटपड़ा निमेवाका-
दि गो गूड्ड भाट

३९। पडानिजापिप गोनिनु। ग्टह १ वजकसिवम्याग्टह १ वोवातुछानि वंवावाटाथि
पाकाथि ग्टह ५

५०। तथा। निडो + वे + + कादि ग्टह ५ नवभाट। निडो × भाट पाकादि ग्टह-
१ भाट पडा निवापपाका-

५१ । दि चड्डिपग्टच २ पिष्मापि नगरे द्दोन्धे नविका + दि ग्टच २ सिद्दाडवग्रामे दन्तक-
वियजवि गो ग्टच १

५२ । कोद्दी ऊह्लको मद्दापाह्लको कोद्दी-सह्लण कोद्दीनो हतां यूठोभां चविषट्टोद्यपच
आसिए न पियूया

५३ । आपियाचे भाल + ड दय आकाद्यः प्रदत्ताः ॥ बहुभिर्वसुधा दत्ता राजभिः सग-
रादिभिर्यस्य यस्य

५४ । यदा भूमिस्तस्य तस्य तदा फलं ॥ स्वदत्तां परदत्तां वा यो हरेत वसुन्धरां स विष्ठायां
कृमिर्भूत्वा पि-

५५ । तृभिः सह पच्यते ॥ पाण्डवकुलादिपालाब्द ४२२८ ।

Translation of No. II.

Salutation to Náráyaṇa. May Kamalákánta (the husband of Kamalá), blue as the precious sapphire, (or) as the lightning-streaked cloud, and arrayed in charming golden drapery, protect you !

2. The lord of nectariferous beam* prevails—he the lion that destroys the herd of elephants formed of lofty and even more lofty masses of darkness,—he the crest-jewel of Mahádeva.

3. In his race was born the crest of the earth. By his birth the noble deeds (of his race) became radiant. He was the all-giving tree (Kalpa tree) to the desires of all who bore arms: he was Gokula, the protector of the earth.

4. His son, the noblest among wielders of arms, the Mandára mountain in the great ocean of arms, by beauty and loveliness made most charming in appearance, was Náráyaṇa.

5. He was the receptacle of all arts, the home of all merit, the assemblage of valour, the substratum of civility, the ocean of gentlemanliness. He was of prominent beauty, and of renowned deeds, the crest-jewel of the universe.

6. Unto him was born as son Keśava Deva, the lord of mighty vigour, the oppressor of enemies, a hero like Govinda,† great as the lord of trees, (Kalpa tree,) whose feet were adorned with the crest-jewels of kings.

7. By his merits, delightful to hear, were attracted hosts of learned Bráhmaṇs, who, having got all their desires gratified, thought not again of their own native places.

8. When he ruled the earth kings never slept even at night, always thinking what precious wealth they should present to him.

9. He the great king, master of an army of innumerable war-bo[ats,] infantry, cavalry, and lines of rutting elephants, made the earth gl[ow] by his fame, white as Kunda flowers.

* The moon. † This may be the proper name and Keśava Deva the

10. He, the mighty, presented to the destroyer of Kaṅśa, a lofty stone temple, the discus on whose towering crest so cut up the clouds of heaven that they fell in showers of rain.

11. By (his performance of) the rite of Tulápurusha* the Bráhmaṇs got so much wealth that they were covered with golden jewels, and became like unto the all-giving tree of desire, (Kalpa tree).

12. From him descended, even as Ráhuleya (Kártika) from Maheśa, (Śiva), or the victor light from the son of Rohiṇí (the moon), Iśánadeva, of glorious deeds, the moon among kings.

13. When his mighty army of infantry, cavalry and elephants issued forth, on victory intent, the dust raised on earth eclipsed the glory of the sun.

14. When his war-boats plied on the aqueous highway, the water was so splashed in masses that it soothed his chariot horses, fatigued by the oppressive rays of the sun.

15. That glorious king built, for the enemy of Madhukaiṭabha, a mansion which licked the clouds, and the flags flowing on its towering crests looked like flowers on aereal trees.

16. Under this lord of the earth there was an able minister† of the name of Vanamálí Kara, a brilliant light in the race of Vaidyas.

17, 18. By his advice this patent (*sásana*) for two ploughs of land with its dwelling land and corn-fields was issued by the king. It should be upheld by the kindly disposed, by the childless eldest prince, as also by the virtuous wife of the dead prince and his infant son.

19. This was suggested by the commander-in-chief Víradatta, the noble lord of battles, the valiant, and the patient, whose fame had spread to the limits of the quarters of the earth.

20. Whoever resumes land, whether given by himself or another, rots as a worm in ordure along with his ancestors.

21. This eulogium was composed by the learned Mádhava, the noblest of the Dása tribe: may it last unchanged as long as the ocean, the hills and the earth remain in existence. 1 Vaiśakha, Samvat 17.

Transcript of Inscription No. II.

१ । ॐ नमो नारायणाय ॥ महानीलमणिश्यामः सुवर्णरुचिराम्बरः पा-
२ । तु वः कमलाकान्तः सविद्युदिव वारिदः ॥ तुङ्गोत्तुङ्गतमःस्तोमनाग-
३ । यूथमृगाधिपः । मौलिरत्नं महेशस्य जयत्यमृतदीधितिः ॥ तदन्वयेभू-
। भुवनावतंसः क्षीयोदये प्रोज्ज्वलकीर्त्तिराशिः । समस्तशत्रुमण्डलार्थ-

* A rite in which a donor weighs himself severally against gold, silver, rice &c., and presents those articles to Bráhmaṇs.

† Paṭṭanika equal to the *Patnáik* of Orissa and *Paṭṭanáyaka* of other inscriptions.

५। कल्पद्रुमो गोकुलभूमिपालः॥ तस्यात्मजः शस्त्रभृतां विशिष्टः सम्भ्रान्तशस्त्रा-
६। र्णवमन्दराद्रिः। श्रिया वृता सन्ततमङ्गमूर्त्तिर्बभूव नारायणदेव एषः॥ निधिः क-
७। लानां भवनं गुणानां शौर्य्यस्य राशिर्विनयस्य भूमिः। सौजन्यपाथोनिधिव-
८। र्द्धितश्रीः प्रख्यातकीर्त्तिर्भुवनावतंसः॥ तस्योरुतेजा रिपुराजशोषी गोवि-
९। न्दवीरो द्रुमनाथसंज्ञः। आपालचूडामणिमण्डिताङ्घ्रिः पुत्रोऽभवत् केश-
१०। वदेवदेवः॥ गुणैर्यदीयैः श्रवणाभिरामैराकृष्यमाणा गुणिनस्स-
११। मन्तात्। आगत्य सम्पन्नमनोरथाश्च न सस्मरुर्जन्मभुवं द्विजेन्द्राः॥
१२। यस्मिन् महीं शासति भूमिपाला निद्रां रजन्यामपि नाधिजग्मुः। सचि-
१३। न्तयन्तः परितापहेतोरमुष्य विश्राणयितुं वसूनि। निःसीमनौवाटकप-
१४। त्तिवाजिप्रभिन्नद्विपावलिसैन्यसम्पत्। स राजराजः कुमुदावदातैर्यशो-
१५। भिरुर्व्वीं विमलीचकार॥ स मन्दिरं कंसनिसूदनस्य शिलाभिरुच्चैर्यदधे
१६। महौजाः। यत्तुङ्गशृङ्गस्थितचक्रधाराचलाः चरन्त्यम्बु घना दिवस्थाः॥
१७। तुलापुरुषदानस्य सम्प्राप्य द्रविणन्द्विजाः। कल्पवृक्षा इवाभूवन् हेमाल-
१८। ङ्कारभूषिताः। तस्मान्महेशादिव वाक्कलेशः पीयूषरश्मेरिव रौहिणेयः।
१९। श्रीमानभून्निर्म्मलकीर्त्तिराशिरीशानदेवः क्षितिपालचन्द्रः॥ यज्जैत्रयात्राप्र-
२०। चलत्पदातितुरङ्गदन्तावलसैन्यकीर्णैः। रजोभिरुर्व्व्याः परिलुप्यमानञ्च-
२१। क्षोन्मदाः सद्यनिमीलदर्कैः॥ यदीयनौवाटककेलिपातघातोच्छलद्वारिभिर-
२२। परस्रैः। रथ्यैस्तुरङ्गैरभिसम्पतद्भिः सन्तापशान्तिः सुतरामलम्भि॥ विनि-
२३। र्म्मितो मधुकैटभारेः प्रासादमभ्रंलिहमुज्जितश्रीः। यत्तुङ्गशृङ्गप्रचलत्पताका-
२४। नभस्तरोर्मञ्जरिकेव भाति॥ एतस्य पृथिवीभर्तू राजपट्टनिकः कृती। वैद्यवं-
२५। शप्रदीपः श्रीवनमालिकरोऽभवत्॥ अस्य विज्ञापनाद्भूपः शासनं कृतवानयम्। राजपु-
२६। त्रो यः स्थविरः पुत्रशून्यः स्वर्गतः॥ पाल्यं भूदलद्वयं तत्रास्य वेतनं
२७। ऋतस्य राजपुत्रस्य पत्नी या कुलपालिका। शिशुश्च तनयः तस्याः पाल्यमेव तयो-
२८। रपि॥ आदेशिकोऽभूत् समरप्रवीरः श्रीवीरदत्तः शतनाधिनाथः। दिग-
२९। न्तसंक्रान्तयशःप्रशस्तिः प्रतापवानूर्ज्जितधैर्य्यराशिः॥ स्वदत्तां परदत्तां वा यो
३०। हरेत वसुन्धरां। स विष्ठायां कृमिर्भूत्वा पितृभिः सह पच्यते॥ एतां प्रशस्तिं विदधे वि
३१। वेकी श्रीमाधवो दासकुलावतंसः। यावत् समुद्रा गिरयश्च यावज्जीयात् क्षितौ ताव-
दियञ्च शस्तत्॥ सं १७ वैशाखदिने १

The following papers were read—

1. *On the Calcutta Water-supplies, past and present.—By* A. Pedler, F. C. S., F. I. C., &c.

(Abstract.)

This paper was divided into three parts. The first was devoted to the consideration of the quantity and quality of the old supply which ex-

isted before the introduction of the present hydrant water. In speaking of the old supply it was assumed to be to a great extent confined to the various tanks and shallow wells distributed throughout the town, for though there is no doubt that the river water was used considerably by the inhabitants who lived near the river, yet the greater number of the inhabitants, living as they did at a distance from the river, must have depended for their supply of household water on the tanks and wells nearest to them. As to the quantity of the old supply, even if it be assumed that it was possible to store up the water which fell in the rainy season for use during the dry months of the year, and granting that one-fifth of the rainfall found its way into the tanks and shallow wells, then each inhabitant of the town could not have had more than 6 or 7 gallons of fresh water daily, and an inhabitant of some parts of the northern division could not have had more than 3 or 4 gallons. The conclusion seems to be inevitable, that, at the time when Calcutta depended for its water supply on its tanks and wells, the inhabitants must have used the same water over and over again, though of course without knowing it.

The state of affairs as to quality was even worse than as to quantity, and the analyses which have been made show at the very lowest estimate that, of the 200 samples of Calcutta tank and well waters examined, forty-four per cent. were true sewages, twenty-two per cent. were dilute sewages, twenty per cent. of the waters were contaminated with considerable quantities of sewage, nine per cent. were "dirty waters," and about four or five per cent. only were moderately safe waters. These last consisted principally of the well kept tanks on the maidan, and two or three others in the southern part of the town. A detailed examination of the results also showed that the tanks and wells of the northern divisions are much more impure, than those of the southern sections of the town.

The second part of the paper dealt with the present water supply of Calcutta which consists of the Hooghly water pumped from the river at Pultah, where it is collected in settling tanks, and after subsidence it is filtered through sand and supplied to Calcutta.

It appears that the total daily supply of filtered and unfiltered water in Calcutta for the past year was 8,556,025 gallons, equivalent to 19·92 gallons per head of population, or practically there were 20 gallons of water available for domestic and sanitary purposes for each inhabitant. This though perhaps not an abundant supply is a fairly liberal one, and is very much larger in quantity than the old supply from tanks and wells. It is, however, not equal to the quantity allowed in most European towns, for the average daily water supply of English towns is about 25 gallons per head of population. In this country, however, it would appear that a more liberal supply would be required than in a European climate, and it is

therefore proposed to double the present supply of filtered water, in which case Calcutta would receive a daily supply of 16,000,000 gallons, equivalent to 37·2 gallons per head. If this proposal is carried out, the supply of filtered water will be most abundant, and it will be amply sufficient for every possible want of the town so long as it keeps to its present dimensions.

From the analyses of the hydrant water, it appears that the Calcutta water falls just outside the class of waters of "great organic purity," but that it is well within the class of waters of "fair organic purity."

On comparing the hydrant water with the average composition of *unpolluted* upland surface water as given by Dr. Frankland, it is found that it is scarcely so pure as unpolluted water should be, and it must therefore be admitted that the Hooghly water has been slightly contaminated before it reaches Pultah. The amount of contamination is, however, not very great and, as pointed out before, the Calcutta water falls well within the class of waters of medium purity. That the Calcutta water must be contaminated to a certain extent must be obvious to any one who is acquainted with the customs of the inhabitants of India, and more particularly of the inhabitants of villages and towns on the banks of the rivers. This contamination is a drawback to the complete safety of the water supply, for a water once contaminated is always more or less dangerous as a water supply. It does not, however, at present appear to be possible to cut off these sources of contamination, and the hydrant water though good is not a perfect supply.

The third part of this paper was devoted to the consideration of the extension of the present water supply. It has been proposed to collect the water from the river within 3 or 4 miles of Calcutta, but it is shown by the analytical numbers that water collected from these places would be decidedly impure, and a strong opinion is expressed that the water for the extension of the supply should be collected at Pultah as has been hitherto done.

Dr. Mitra remarked that the paper read would prove valuable to the Municipal Commissioners of Calcutta, who were engaged in considering a project for the doubling of the water-supply of the town, and hoped that it would be published early. He was glad to notice that great emphasis was laid on the inadequacy of the present supply, and on the necessity of increasing it largely. He did not, however, entirely agree with Mr. Pedler in the conclusions he had come to with regard to the extent of the water-supply in former times. There was never any want of water; there was enough and to spare. The sources of the supply were not limited to tanks and wells, as stated in the paper: the river yielded the largest supply. All along the western side of the town, the people depended mainly on the

river; they bathed there, and drew their supply for domestic consumption entirely from it, limiting the well-water available in their homes to washing of floors and courtyards, and other coarse purposes. People in the centre and the eastern parts also drew their supply of drinking water from the same source. There was a great number of people who earned their living by carrying river-water in banghis from house to house, and they not only carried the water all over the town, but also to the suburbs, and water was purchased at the home of the speaker, three miles to the east of the town, at two annas per banghi load. For bathing and washing of clothes there were numerous tanks, and no want of water was ever felt in the town. The real difficulty was the *quality*, and not the *quantity*. The well-water was, as it is now, horribly stinking, and tanks frequently could not but contain very filthy water, utterly unfit for potable purposes. River-water too was muddy, and at times saline. The practice, therefore, was for all well-to-do people to obtain the river-water in the month of January, during the second quarter of the moon, and at ebb tides, and to store it in large jars for the consumption of the whole year. Those who could not afford to do this, drew their supplies for a fortnight at a time, on the 6th, 7th or 8th of the moon during ebb-tide. The water in such cases was invariably clarified by the addition of a small quantity of an emulsion prepared by rubbing the nut of the Strichnos potatorum, (*nirmali*) on a stone, or by the addition of a little alum. This promoted the precipitation of all earthy matter contained in the water. This clarification was resorted to even by those who drew their supplies daily, and in such cases the water was allowed to stand for 24 hours before it was drunk. The higher classes used porous sandstone filters, for improving their drinking water; and many collected rain water and stored it for use. It was a common practice among rich Hindus and Europeans to set up large sheets on housetops, or on open courtyards, to catch the rain-water in gumlows, whence it was transferred to jars for use during the rainless months. The practice ceased since the importation of carbon filters from Europe. All these expedients were, however, troublesome, and not at all accessible to the poorer classes, who suffered greatly from unwholesome water. The filtered supply from Pultah has, therefore, proved a great blessing to them. The complaint now is that that supply is insufficient, and nothing short of a very large increase will suffice to remove it. In this respect a common mistake is the acceptance of European data for the calculation of the wants of a tropical population. The habits, customs and wants of the latter bear no relation to those of the former. The loss sustained by excessive heat during the greater part of the year, and the necessity of frequent washings and bathings, are such that even the doubling of the European datum would not cover them; and it is of the utmost importance that this should be fully

borne in mind by those who are engaged in devising a scheme for increasing the water-supply of Calcutta. As shown by Mr. Pedler most of the existing tanks were very offensive, and should be obliterated as soon as possible, and this cannot be done until the pure supply is greatly increased, for in a tropical climate nothing can be a greater calamity than scarcity of water; and it is far better to have an abundance of impure water than a scanty one of pure water. No man, however intelligent he may be, will, when impelled by heat and thirst, abstain from impure water when he has nothing better at command. Europeans in this country did not always bear this fully in mind, and hence there was a great difference of opinion among them, and the people of the town.

Mr. Waldie said that he had listened with much interest to the statements that had been made. His own experiments, made many years ago, just before the new processes for the examination of potable waters had been published, were, notwithstanding the imperfection of previous processes, quite in accordance with those obtained more fully and perfectly by Mr. Pedler. He had found the tank waters he had examined generally very bad; even the waters of the best maidan tanks were decidedly inferior to the river water.

The paper will be published in full in the Journal, Part II.

2. *On the Identity of the place Upello near Delhi with Upaplava, mentioned in the Mahábhárata.*—*By* Pandit Rishikesh Bhattacharya *of the Lahore Oriental College. Communicated by* Dr. G. W. Leitner, *Principal, Government College, Lahore.*

(Abstract.)

The author, after rejecting various conjectures, made by different persons, as to where the kingdom of Viráṭa (to which Upaplava belonged) was situated, examines several passages of the Mahábhárata, bearing on the subject and comes to the conclusion, that it must have been situated to the south-west of Delhi, and that, consequently, Upello on the Delhi and Agra road may be the Upaplava of the Mahábhárata.

Dr. Mitra took exception to the statement of the Paṇḍit that the people of Midnapur consider their district to have been Viráṭa, and thought that the Paṇḍit must have confounded Midnapur with Dinajpur, which has often been described as the Viráṭa of the Mahábhárata. Dr. Mitra was satisfied that neither the one nor the other had any claim to that name. According to the Mahábhárata the Kurus went on a cattle-lifting expedition to Viráṭa, and it would be absurd to suppose that they could do so from Hastinápur, their capital, to either Midnapur or Dinajpur. Phonetic similitude has led some people to identify Viráṭa with modern Berar, but

that too was for the reason assigned untenable. The province must have been close to Delhi, and Mr. Talboys Wheeler had taken it to be modern Hariyáná, noted for its superior cattle, or some place near it.

Dr. Hoernle said that General Cunningham, too, in his "Ancient Geography of India" had determined the position of Viráṭa in the south-west of Delhi, where the town of Bairát is now. He also thought that on linguistic grounds there might be some difficulty in the proposed identification.

The paper will be published in full in the Journal, Part I.

Library.

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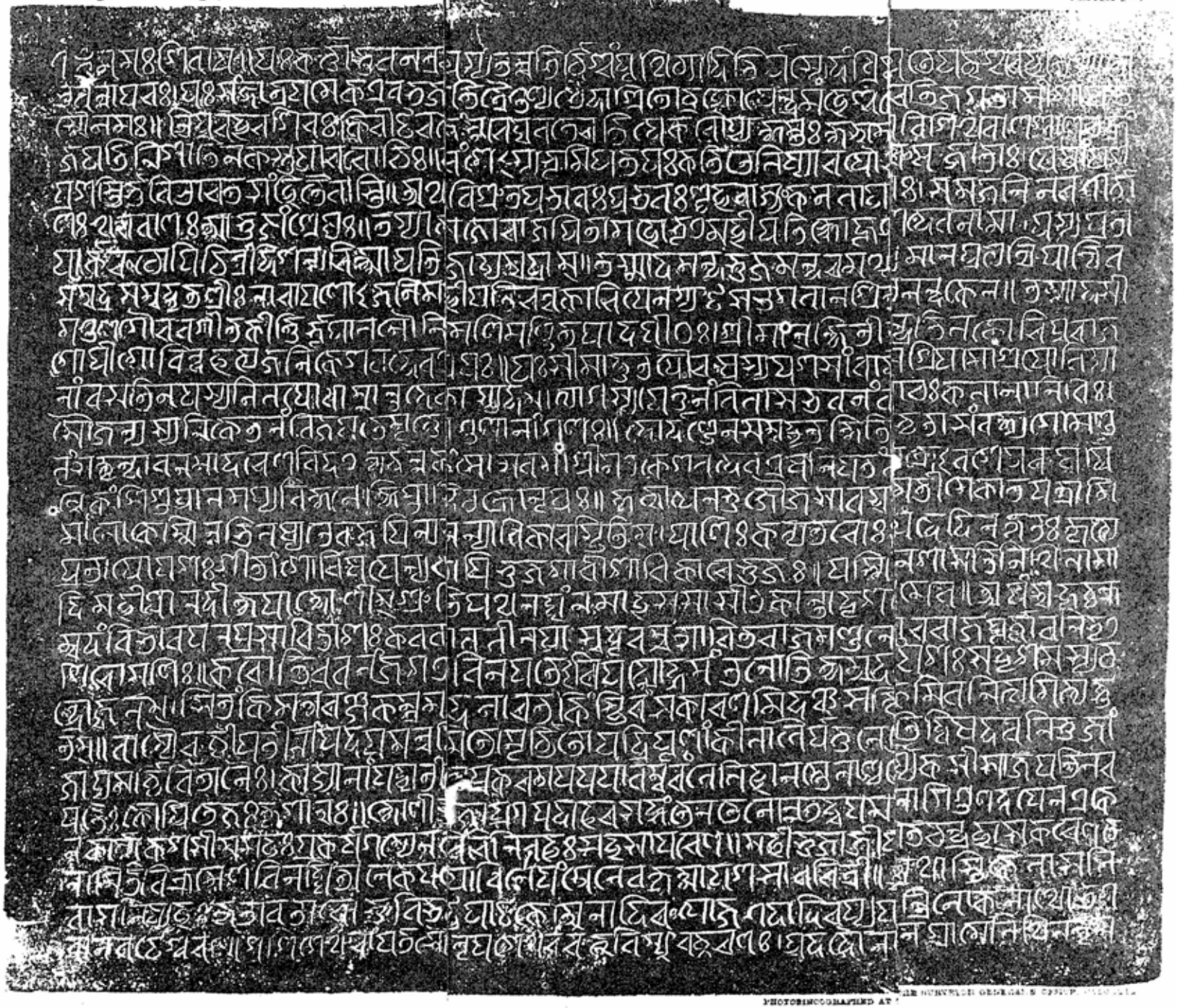

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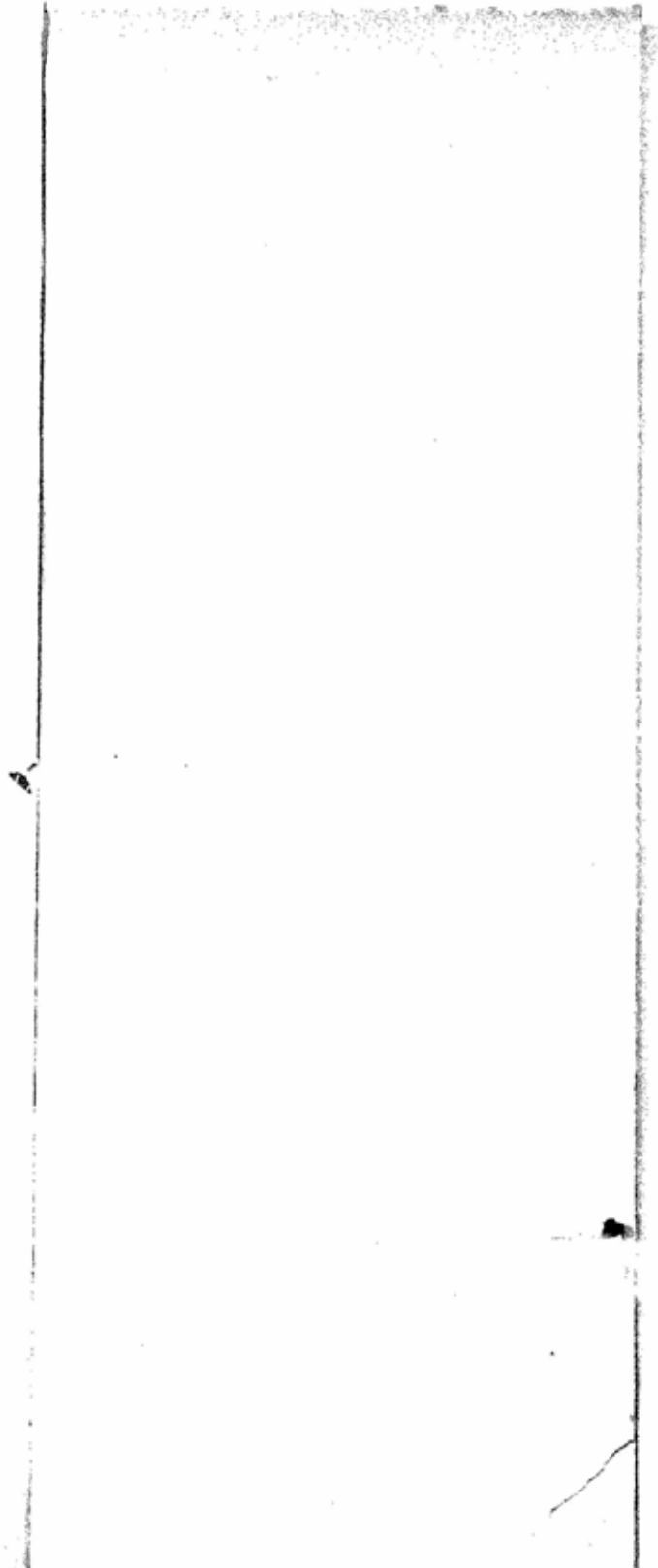
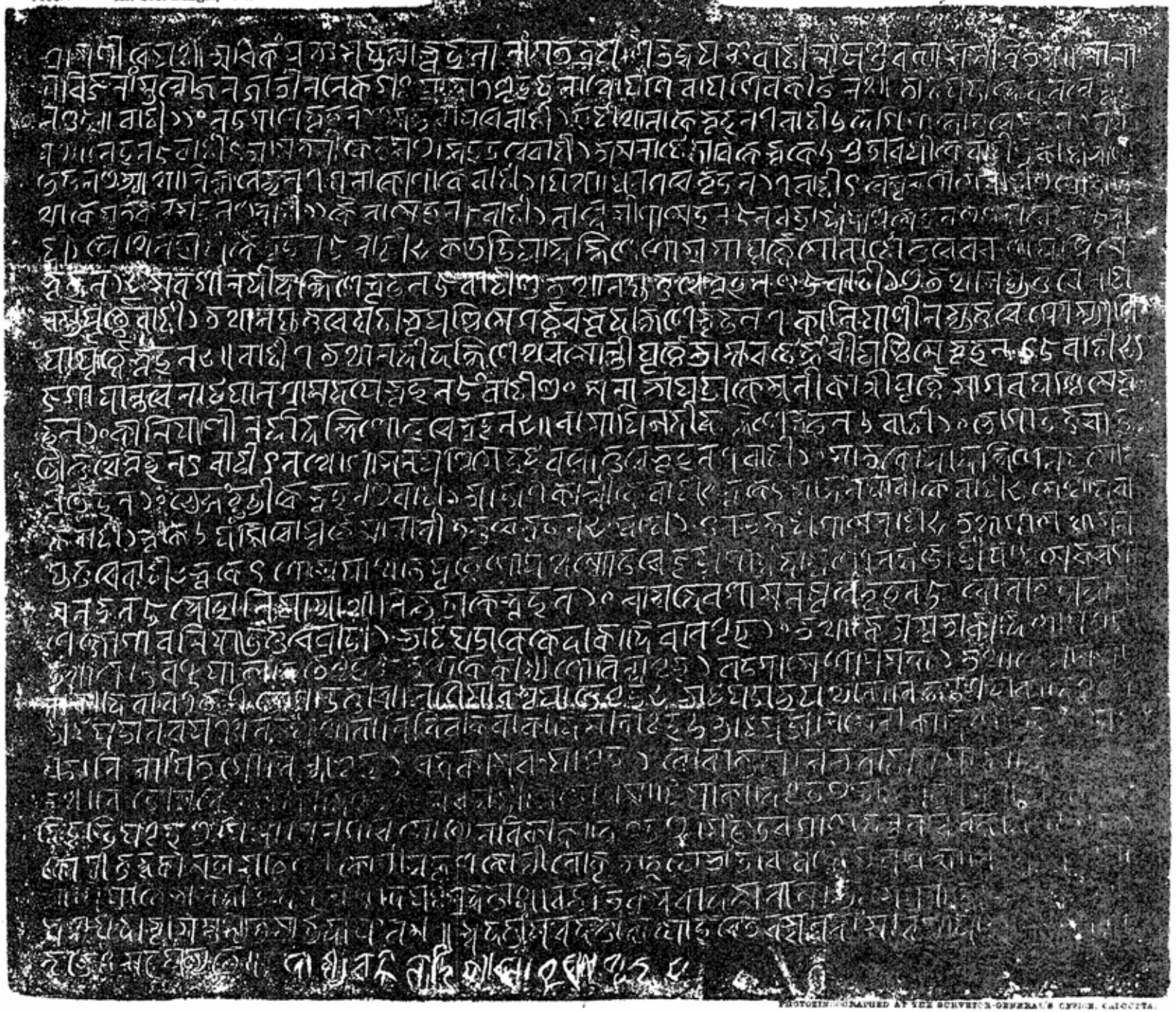
FACSIMILE OF THE FIRST PLATE OF A SÁSANA BY KEŚAVA DEVA, FROM SYLHET.





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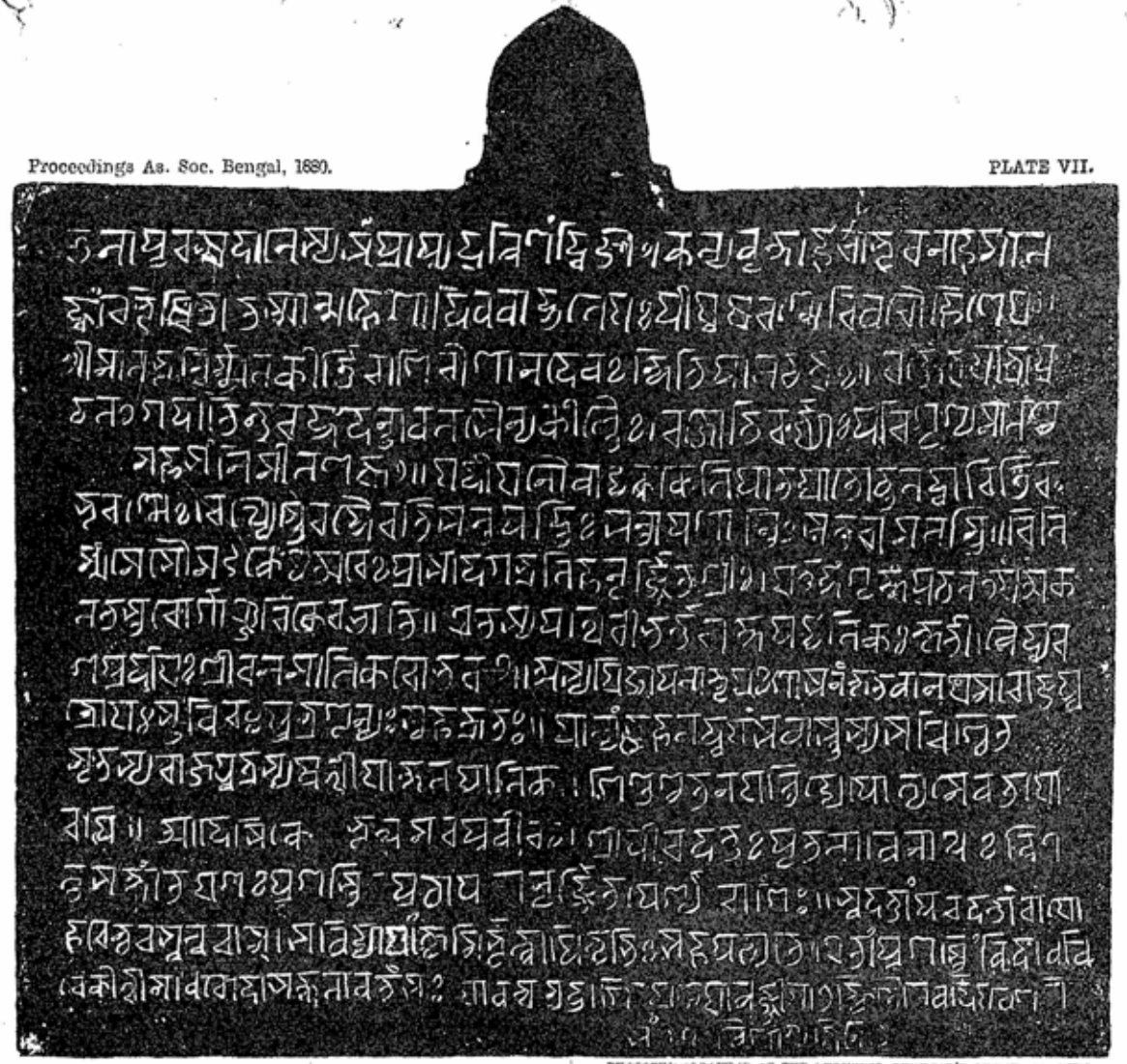

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR NOVEMBER, 1880.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 3rd November, at 9 o'clock P. M.

H. B. MEDLICOTT, ESQ., F. R. S., in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the British Museum,—A Catalogue of the Greek coins in the British Museum (5 Vols.), edited by R. S. Poole.

2. From the Society of Telegraph Engineers,—Catalogue of Books and Papers relating to Electricity, Magnetism, the Electric Telegraph &c., including the Ronalds Library, by Sir F. Ronalds, edited by A. J. Frost.

3. From the Zoological Society of London,—Catalogue of the Library of the Zoological Society of London.

4. From the Marine Survey Department,—(1) General Report on the operations of the Marine Survey of India, for the year 1878-79, (2) Return of Wrecks and Casualties in Indian Waters for the year 1879, and (3) Charts of the Samuie Strait, Langsuen Roads and Approaches, and Lacon Roads.

5. From the St. Xavier's College Observatory,—Observations taken at the Observatory from January to June 1880.

6. From the Home, Revenue and Agricultural Department,—A Grammar of the Eastern Hindi compared with the other Gaudian Languages, by Dr. A. F. R. Hoernle, (2) The Life of Alexander Duff, D. D., LL. D. (2 Vols.), by G. Smith, and (3) The Cave Temples of India, by James Fergusson and James Burgess.

7. From the Sanskrit Text Society,—(1) Vaitána Sútra, the Ritual of the Atharvaveda, edited, with Critical Notes and Indices, by Dr. R. Garbe, and (2) Vardhamâna's Ganaratna Mahodahi, with the Author's

Commentary, Part I, edited, with Critical Notes and Indices, by Julius Eggeling.

8. From the Authors,—(1) The Kings of Kashmir, by Jogesh Chandra Dutt, (2) Kaiser Akbar, Ein Versuch über die Geschichte Indiens in sechzehnten Jahrhundert (Part I), by Graf. F. A. Noer, (3) A Brief Account of the Early History and Antiquities, Castes and Traditions of the Hamirpur District, by V. A. Smith, and (4) On the mode of Occurrence and Distribution of Diamonds in India, by V. Ball.

9. From the Boston Society of Natural History,—Contributions to the Geology of Eastern Massachusetts, by W. O. Crosby.

10. From the University of Athens:—(1) Catalogus Systematicus Herbarii Theodori G. Orphanidis, Fasc. I, Leguminosæ, by Th. de Heldreich, and (2) Synopsis numorum veterum qui in Museo numismatico Athenarum publico adservantur, by A. Postolacca.

11. From the Munich Academy of Sciences,—Ignatius von Loyola an der Römischen Curie, by A. von Druffel.

12. From the Madras Government,—(1) A classified Index to the Sanskrit MSS. in the Palace at Tanjore (Part III), by A. C. Burnell, and (2) some lead coins found in the Kistna District.

13. From the Maharaja of Kashmir,—2 copies of Chapters 5—21 of the Prayaschitta Bhag, with commentary.

14. From the Department of the Interior, U. S. America,—Report of the U. S. Geological Survey of the Territories, Vol. XII.

15. From the Society of Agriculture &c. of Lyons,—Monographie Géologique des Anciens Glaciers et du Terrain Erratique de la partie moyenne du Bassin du Rhone (Atlas), by A. Falsan and E. Chantre.

16. From the Foreign Department,—Tribes of the Hindoo Koosh, by Major J. Biddulph.

17. From R. L. Jack, Esq.,—Geological Sketch Map of the District between Charter Towers Goldfield and the Coast.

18. From the Meteorological Reporter to the Government of India,—Report of the Meteorology of India in 1878.

19. From the Government, N. W. P.,—(1) Mathura, a District Memoir (second edition), by F. S. Growse, and (2) The Ramayana of Tulsi Dás, Books III—VI, by F. S. Growse.

20. From the Secretary of State for India,—Vols. 59, 60 and 62 of the Hakluyt Society's publications—(1) The Voyages and Books of John Davis the Navigator, (2) The Natural and Moral History of the Indies, by Father Joseph de Acosta, Vol. I, (3) The Commentaries of the Great Afonso Dalboquerque, Vol. III.

21. From the Trustees Indian Museum,—Indian Museum. Annual Report, Lists of Accessions, and Selected Extracts of Minutes, April 1879 to March 1880.

22. From the Batavian Observatory,—Observations made at the Magnetical and Meteorological Observatory at Batavia, Vol. IV.

The following Gentlemen duly proposed at the September meeting of the Council were balloted for and elected Ordinary Members—

1. Lieut. R. R. N. Sturt, B. S. C., proposed by G. Hughes, Esq., C. S., seconded by P. Johnstone, Esq., C. S.

2. Babu Kshiroda Chandra Raya, proposed by Dr. R. L. Mitra, seconded by A. Pedler, Esq.

3. Rev. Charles Swinnerton, proposed by H. B. Medlicott, Esq., seconded by Alex. Pedler, Esq.

4. Babu Pramatha Nath Bose, B. Sc., F. G. S., proposed by H. B. Medlicott, Esq., seconded by W. T. Blanford, Esq.

The PRESIDENT announced to the meeting that, in accordance with Rule 7, the following Gentlemen had been balloted for and elected Ordinary Members by the Council during the recess—

1. R. W. Nicholson, Esq.
2. Lieut.-Col. M. G. Clerk.
3. Babu Benod Behary Mullick.
4. Babu Sib Chunder Nag.
5. Khalif M. Hassan, Khan Bahadur.
6. E. M. Sage, Esq., proposed by R. Gordon, Esq., seconded by A. Pedler, Esq.
7. R. C. Lees, Esq., proposed by L. Schwendler, Esq., seconded by A. Pedler, Esq.

The elections were confirmed by the general meeting.

The following Gentlemen are candidates for ballot at the next meeting.

1. W. Grierson Jackson, Esq., C. S., Mirzapur, proposed by H. Rivett-Carnac, Esq., C. S., seconded by Dr. G. Thibaut.

2. Dr. Kirton, proposed by Dr. J. M. Coates, seconded by J. Wood-Mason, Esq.

3. R. D. Oldham, Esq., A. R. S. M., proposed by H. B. Medlicott, Esq., seconded by W. T. Blanford, Esq.

4. Moulvie Dilawur Hasein Ahmad, proposed by Moulvie Kabiruddin Ahmad, seconded by A. Pedler, Esq.

5. J. R. Napier, Esq., proposed by L. Schwendler, Esq., seconded by A. Pedler, Esq.

6. H W. McCann, Esq., D. Sc. etc., proposed by Dr. Hoernle, seconded by A. Pedler, Esq.

The SECRETARY reported that Dr. D. O'Connell Raye and Mr. E. O'Brien had withdrawn from the Society, and that Pandit Mohanlal Vishnulal Pandia had compounded for his future subscriptions.

The SECRETARY reported that 4 gold coins from the Collector of Budaun had been acquired under the Treasure Trove Act.

With reference to the notice, at the May meeting, of works sanctioned for publication in the Bibliotheca Indica, the Secretary announced that Dr. L. Schroeder had been permitted to withdraw his edition of the Maitráyani Samhitá and that in its place the Apastamba Sútra had been substituted, to be edited by Dr. R. Garbe. The Apastamba Sútra is a very rare and important work connected with the Black Yajur Veda. It consists of three sections, divided into 30 chapters. The first section of 24 chapters contains the Srauta Sútras. It is this section that will be edited by Dr. Garbe. The section on the Dharmasútras has already been edited by Dr. G. Bühler, and that on the Grihya Sútras is in the hands of Dr. Eggeling. Dr. Garbe's edition will give the text accompanied by the commentary of Rudradatta. The edition will be based on a collation of two or three complete and several fragmentary manuscripts of the work.

The SECRETARY read two letters from Major J. Waterhouse regarding the proceedings of the Blochmann Memorial Committee in England.

Major Waterhouse states in a letter, dated July 16th, that Mr. W. T. Blanford and himself had consulted with Mr. Grote, and that they had visited the studios of various sculptors in London. They had decided on entrusting the commission to Mr. E. R. Mullins, who has already executed a bust of the late Mr. Woodrow, which is now in the Calcutta University. Mr. Mullins is to receive one hundred guineas for making the bust of the late Mr. Blochmann. In a further letter received from Major Waterhouse, dated September 8th, he states that the model of the bust is making satisfactory progress, and Mr. Mullins had, in the opinion of Mr. Blanford and himself, secured a very fair likeness of the late Mr. Blochmann.

1. The Philological Secretary exhibited some gold and silver coins forwarded by Mr. H. Rivett-Carnac, and read some remarks by him on the same.

Mr. Rivett-Carnac says—

"I have the pleasure of forwarding for the inspection of the Society 2 silver and 4 gold coins recently dug up near Jellalabad, and procured for me there by Lieut. A. Durand of the Central India Horse.

"The two large silver coins are of Eucratides of a well known but I believe not common type. It will be noticed that they are in beautiful preservation.

"The other two silver coins are of Antiochus; on the obverse will be noticed what seems to be a 'horned Horse.'

"I have also obtained a gold coin of Antiochus of the same type and a gold one of Euthydemus which are both sent for the inspection of the Society. These coins are in beautiful preservation.

"I should be glad to know whether all these coins are known to the Society. Unfortunately I have no books with me to which I can refer.

"I have mentioned 2 silver coins of each but I send one only, as there is no object in sending two exactly the same.

"By this opportunity I also send 2 gold Roman Coins found by Col. Berkeley, Political Agent at Rewah, in the Maharajah's subterranean Treasury. The one appears to be of Septimus the other of Pertinax. Col. Berkeley has very kindly permitted me to submit them for the Society's inspection; and I am confident that his courtesy in the matter will be much appreciated by the members.

"In continuation of former correspondence I now send 2 gold coins, apparently Roman, found by Colonel Berkeley, Political Agent, Sutna, in the subterranean Treasury of the late Maharajah of Rewah after his death.

"Col. Berkeley to whom the credit of the discovery of these interesting coins is due, is good enough to desire that the Asiatic Society should have an opportunity of seeing these coins, and he would wish for the opinion of Dr. Rudolf Hoernle and General Cunningham thereon."

2. The Philological Secretary exhibited a photograph of 3 Indo-Aryans, sent for the inspection of the Society by Dr. G. W. Leitner.

3. The Secretary exhibited an Afghán helmet sent for the inspection of the Society by Lieut. R. C. Temple, and read a letter descriptive of it.

"I have the pleasure to send herewith a brass helmet sent down from Kabul by an officer at the front.

"It has no marks of age about it except the polish of the brass and the date on the plate which I read as 882 or 677 according to which side of the rim of the plate is considered uppermost. H. 882 would give us A. D. 1478 circ. and H. 677 circ. A. D. 1280. I should not be inclined from its appearance to ascribe this age to the helmet.

"The chain appears to be English and not to belong to it.

"I read the plate thus inside

اول قوايئوازي الرو اكبر

and round the rim

كار خانه لار (۶) السلطان كابل

date ۸۸۲"

Mr. Westland pointed out that the helmet was so distinctly modern and European in shape (regular Ellwood pattern), that there must be the gravest doubts as to its antiquity. The ornamentation too was the regular British idea of a lion-face and had nothing oriental about it. The only argument for its antiquity was the fact that in a factory-mark upon it the figures 8, 8, 2, appeared in contiguity, but they might represent any num-

ber of other things besides the Hijra date. In fact, even taking them as intended for a date, there was another unaccounted for figure beside the 2, namely an ١ or an alif. He could not pretend himself to any knowledge of such subjects, but he had been informed on enquiry that writers of Arabic characters sometimes reversed their usual practice of writing the figures thus—units, tens, hundreds, thousands, and wrote them like the English, *viz.*, thousands, hundreds, tens, and units. And if the figures upon this inscription were thus read, it gave the date 1288, exactly twelve years ago.

He also pointed out that the inscription referred the helmet to the "arsenal of the Sultan of Kabul," and said that it was very doubtful if a potentate existed, except in recent times, who could claim that title.

A few remarks were made by several other members present on the manufacture and present appearance of the helmet, and the general opinion seemed to be that it was of very modern manufacture.

4. The Philological Secretary read a letter from Mr. C. Girdlestone regarding the legend on Mr. Gennoe's medal, which was exhibited at the June meeting.

Mr. Girdlestone writes—

"I have just been looking through the Asiatic Society's Proceedings (No. VI), for June 1880, and it appears to me that the legend on Mr. Gennoe's medal quoted at page 100 means to convey the words Sri 2 (do) Swami Ji Jalh (or Jalhu).

"The use of Sri with a numeral after it to express the degree of honour is common in Nepal. Thus in official parlance the Maharaj Adhiraj (Sovereign) of Nepal is Sri Pánch (5) and the Prime Minister Sri Tin (3). The British Resident is also sometimes addressed as Sri Tin."

Dr. Hoernle remarked that he was glad to see that Mr. Girdlestone's reading of the inscription on the medal was a confirmation of that already given by Dr. Mitra and himself at the meeting of June.

5. A letter was read from Dr. Mitra forwarding an extract from a letter from General Cunningham on the locale of the two Buddha-Gayá inscriptions noticed in the Proceedings for April last.

Dr. Mitra says—

"In my remarks on the two Buddha-Gayá inscriptions, published in the Proceedings for April last, there is an omission which should be supplied. When I exhibited the inscriptions I knew not the exact locale where they had been found. General Cunningham has now favoured me with the information. In a letter, dated Simla, August 30, he says: 'The two inscriptions which I brought from Buddha Gayá and which you have translated, were found in different places. The larger one was found in the *mound* to the north of the Tárádeví temple, where an excavation was made to furnish

bricks for the Burmese dwelling house. The other smaller inscription was found on the opposite side of the great temple; that is to the south of it. But neither of the inscriptions was *in situ*.' The statement that the inscriptions when found were not *in situ* is of great importance. It shows that they had been brought from somewhere else, and unless this is admitted the cave mentioned in one of them would be inexplicable. It is certain that the rubbish mounds did not exist when the cave was cut, and it could not therefore have been a cutting in a heap of earth, even if it could be assumed that such a cutting would be deemed worthy of an inscription. The record gives the locale of the cave to have been Jayapura, the site of which I have not yet been able to identify. A reduced facsimile of the record is annexed for ready reference. (Plate VIII.)"

The NATURAL HISTORY SECRETARY then exhibited the skin and skull of a male tailless rat which had been sent to the Society by Dr. J. E. T. Aitchison. The animal is recognized as the *Lagomys rufescens* which was first described by Dr. Gray from Afghanistan, and which was afterwards rediscovered by Mr. W. T. Blanford near Kohrad north of Ispahan in Persia, where it lives at elevations exceeding 8,000 feet. The present specimen was obtained by Dr. Aitchison at an elevation of from 11,000 to 12,000 feet amongst boulders on the Safed Koh Range, Mt. Síka Ram in the Kuram valley.

The following papers were read—

1. *On some experiments instituted to supply all the lines terminating at the Calcutta Telegraph Office with currents tapped from the main current produced by a Dynamo-Electric Machine.—By* LOUIS SCHWENDLER, ESQ., M. I. C. E., &c.

Mr. Schwendler gave an outline of his paper explaining the latest experiments he had made in order to prove the practicability of his new method of supplying signalling currents. This method was published in the Journal of the Asiatic Society, Part II, Vol. XLIX, 1880, and in the Philosophical Magazine, No. 52, December 1879, Supplement. After certain incidental delays, the final trial came off on Sunday, the 29th August, 1880.

One of the Dynamo-Electric Machines, employed for lighting the sheds at Howrah Railway Station, produced the required strong main current, and the signal currents were conveyed from Howrah to the Calcutta Telegraph Office by an ordinary Telegraph line about 2 miles in length.

In all *eleven* long main circuits were supplied with telegraph currents in this manner, *viz.*, the lines to Bombay, Madras, Kurrachee and Rangoon. The currents sent from Calcutta, and the currents received at the out-stations were measured, and by it the satisfactory result was established that in all the lines, even in the longest, the tapped or machine currents were

considerably stronger than the currents produced by the ordinary signalling batteries at present in use.

The trial lasted for 3 hours under the direct supervision of Mr. C. B. P. Gordon, the Superintendent of the Bengal Division, who carefully watched the working of the office. The traffic was despatched with regularity in the ordinary manner.

At the beginning of the trial the main current was produced through an iron wire of 0·21′ diameter, offering a resistance of 1·5 B. A. U. This main current was carefully measured, and found to be equal to 36801 milli-oersteds. At the end of the trial the main current was produced through the arc of an electric lamp, giving a light of about 6000 Standard candles when measured under an angle of 45° with the horizon. In this latter case the main current amounted to 45706 milli-oersteds.*

The total current tapped from the main current (when all the eleven lines were simultaneously sending) equalled 129 milli-oersteds, quite an insignificant fraction of the large main current.

Mr. Schwendler stated that this practical trial of the method had shown that it was perfectly reliable, and no practical Telegraph Engineer would doubt that it was very convenient to produce the currents in this manner. It was therefore under consideration to introduce the system at the Calcutta office. Mr. Schwendler concluded his paper with some suggestions for utilizing the larger portion of the current not required for Telegraph purposes, saying: "The useful work for the main current at night would most conveniently take the shape of an electric light to illuminate very efficiently the Signal-office. The electric light would produce at least 50 times less heat than if the same quantity of light was obtained by combustion, and this is no doubt a great advantage in a hot climate like that of India. During the day time the main current might be used for pulling the punkhas, lifting messages, or, more generally, for working a pneumatic system of despatching messages between the Head Telegraph office and local centres in Calcutta. If Calcutta had the good fortune to possess a colder climate, it might be suggested to use the heat developed by the main current in a coil of iron wire, for warming rooms. It would then only be necessary to lead the wire along the walls in a manner similar to that in which rooms are often heated by hot water pipes; only the electrical method would be far more economical. The quantity of heat given out by such a wire is by no means small. In one case it was equal to 20473 Ω ergs per second equal to 488 Grm. degree-centigrade per second. This is about equal to the heat produced by an ordinary Ger-

* *One Oersted* is equal to *one Weber* per second.
One Milli-Oersted is equal to *one Milli-Weber* per second.

man Stove consuming 6 lbs of coals per hour, supposing that the loss of heat when coals burn under a steam boiler is about four times greater than when they burn in a German Stove. It appears therefore that the heat emanating from the wire should suffice to keep a moderately sized and ordinarily ventilated room at a comfortable temperature even when situated in the highest latitude."

The paper will be published in full in Part II of the Journal.

2. *On a Celt of the Palæolithic type, found at Thandiani, Punjab, September 10th, 1880, by Charles Francis Massy-Swynnerton. By the* Rev. Charles Swynnerton.

This unmistakeable relic of the Stone Age is especially interesting as being, I believe, only the second of its kind which has yet been discovered in the Punjab.

The first was found in the vicinity of Attock by Mr. W. Theobald, and a description of it appeared in the Records of the Geological Survey, Vol. XIII, Part 3.

A front and a side view of the present specimen, exactly the size of the original, are given in Plate IX. The stone out of which it was chipped is black close-grained limestone. Its weight is thirteen tolas. Its edges and angles are considerably worn from the effect of soft pressure, or from exposure. It was found by my little son. The peculiarity of the shape of this interesting curiosity attracted his fancy in one of his daily walks, and he brought it back with him to the bungalow as a plaything, not of course knowing its nature or its value.

It should be added that the geological formation of the locality in which it was found is almost uniformly light grey limestone (*not* of the character of that of which the celt is fashioned), and that the elevation is about 8,400 feet.

3. *Contributions to the History of Bundelkhand.—By* V. A. Smith, C S.

Abstract of Part I.

Mahoba traditions assert that a Gaharwár Ráj at some undefined date preceded the famous Chandel dynasty.

The traditions are indistinct, and little is known of the dynasty except that many tank embankments were made in its time; a list of eleven of these is given, all of them being situated within a radius of 15 miles from Mahoba.

This circumstance indicates that the Gahawár principality was a small one.

It is conjectured that it was established in the seventh century, after the dismemberment of the kingdom of Harsha Varddhana king of Kanauj, which doubtless included Mahoba.

The Gahawár rulers of Bundelkhand may have been connected with the Gahawár dynasty of Kanauj.

According to the Mahoba traditions the Gaharwárs were succeeded by Parihár chiefs, who were displaced by the Chandels.

General Cunningham is quoted to show that the little state of Uchahara or Nagod, between Allahabad and Jabalpur, which is still ruled by a Parihár chief, is a fragment of the larger Parihár kingdom which included Mahoba.

The traditions of several places in the Hamirpur District affirm the former existence of a large Parihár State.

The traditional dates assigned for the establishment of the Chandel dynasty are then examined.

These dates are variously given as 204: 225: 661: 677: and 682, Samvat.

The writer believes that the dates 204 and 225, should be, as General Cunningham suggested, referred to the era of Srí Harsha in 607 A. D.; and, differing from General Cunningham, suggests that the dates 661, 677 and 682 should be read 561, 577, and 582, and referred to the newly discovered Chedi or Kulachuri era beginning in 249 A. D.

The date 831 A. D. is assumed as the date for the overthrow of the Parihárs by the Chandels.

Some miscellaneous traditions relating to early Parihár immigrations into Bundelkhand are then given.

Abstract of Part II.

The general outline of the Chandel genealogy and chronology having been already settled, this essay deals with disputed and doubtful points, and the collation of the published and translated inscriptions of the Chandel dynasty is carried further than has yet been attempted.

The writer also aims at setting forth in an intelligible and concise form all that is now known regarding the reign of each of the Chandel kings.

The appended chronological table sets forth the principal conclusions which have been reached, and will be found on examination to differ considerably from any hitherto published.

Kírtti Varmma I (*alias* Deva Varmma Deva *alias* Bhúmipála), who reigned from about 1149 to 1150 A. D., is held to have been the conqueror of Kamer Kulachuri king of Chedi *circa* 1095 A. D., and to be the Kírat Brahm of tradition.

Gaya Varmma of the coins and of the Man-Chhatarpur and Kaling No. II inscriptions is shown to be the same as Kírtti Varmma (the second) of the Angási copper plate.

It is further proved that only one Sallakshana Varmma reigned, not two, as has been supposed.

The prominent position of the Jain sect in the reign of Madana Varmma (*circa* 1130-1165 A. D.) is noticed.

The second conquest of Chedi by Madana Varmma is discussed; the writer believing this event to have occurred about the year 1160 A. D.

Reasons are given for believing that about that time the Chandel dominions extended to Bilharí near Jabalpur, the territory now known as the Ságar and Damoh districts being administered by a chief still remembered as Rájá Belo or Belá.

Madana Varmma Deva was succeeded by Paramárdi Deva, commonly known as Parmál or Parmár, who died in 1202.

Attention is called to the fact that none of the coins of this king are known, and that no building can with certainty be ascribed to him, and that only one inscription appears to be known as certainly dated in his reign. Reason is shown for believing that little credence can be given to Chand's account of the war between Parmál and Prithiráj of Delhi.

Chronological Table of the Chandel Dynasty 831—1182 *A. D.*

No.	Rájá.	Date A. D.	Event.	Authority.
1	Nánika.	831	Accession, and overthrow of Parihárs at Mahoba.	Tradition and calculation.
2	Vákpati.	850	Accession.	Date calculated.
		862	Bhoja king of Kanauj in possession of Chanderí.	Inscription at Chanderí, Arch. Report, IX, 84.
3	Vijaya.	870	Accession.	Date calculated.
4	Ráhila.	890	Accession.	....
5	Harsha.	910	Accession.	....
6	Yáso Varmma.	930	Accession.	....
7	Dhanga.	950	Accession.	....
		954	Building temple at Khajuráho.	Chaturbhuj inscription.
		978	Assisted in battle of Lamghán.	Farishta.
		998	Grant of land.	Nunama, No. II inscription.
		999	Death at Prayág.	Lálájí inscription.
8	Ganḍa Deva.	999	Accession.	Ditto and Man Chhatarpur inscription.
		1008	Assisted Rájá Jaipál of Lahore against Mahmúd of Ghazní.	Farishta.
		1011	Rájá Kokalla.	Inscription at Khajuráho.
		1021	Conquered Kanauj.	Farishta.
		1023	Surrendered Kálanjar to Mahmúd of Ghazní.	
9	Vidhyádhara Deva.	1025	Accession.	Date calculated.

No.	Rájá.	Date A. D.	Event.	Authority.
		1030	Gángaya Deva king of Chedí ruling at Tripuri.	Abú Rihán.
10	Vijaya Pála Deva.	1035	Accession.	Calculated date.
11	Kírtti Varmma Deva the First, *alias* Deva Varmma Deva *alias* Bhúmipála.	1049	Accession.	Date calculated.
		1050	Grant of land by Deva Varmma Deva.	Nunama, No. I inscription.
		circa. 1080	Defeat of Karna of Chedi. First issue of Chandel coinage.	Exact date conjectured.
		1097	In possession of fort of Deogarh.	Inscription at Deogarh.
12	Sallakshana Varmma Deva.	1100	Accession.	Date calculated.
13	Jaya Varmma Deva *alias* Kírtti Varmma Deva the Second.	1110	Accession.	Date calculated.
		1116	Lálájí inscription re-written.	Lálájí inscription.
14	Prithví Varmma Deva.	1120	Accession.	Date calculated.
15	Madana Varmma Deva.	1130	Accession.	Date calculated.
		1131	Image of Varadá set up at Kálinjar.	Maisey's, No. IV inscription.
		1133	Grant of land.	Angásí copper plate.
		circa. 1143	Construction of Bela Tál at Jaitpur.	Tradition.
		1154	Jain image set up at Mahoba.	Neminátth inscription.
		1158	Ditto ditto.	Sumatinátth ditto.
		„	Ditto, at Khajuráho.	Sambhunátth ditto.
		circa. 1160	Conquest of Chedi.	Date conjectured.
		1163	Jain image set up at Mahoba.	Ajitanátth inscription.
		1164?	Inscription set up at Kondalpur?	Sir Wm. Sleeman.
		circa. 1160 to 1165	Rájá Bels built Singorgarh. Bilhari held by a Chandel governor.	Ditto, and Central Provinces Gazetteer.
16	Paramárddi Deva, known as Parmál or Parmár.	1165	Accession.	Date calculated.
		1167	An inscription recorded.	Inscription.
		? 1171	Inscription recorded at Kálinjar.	? Inscription.
		1182	Capture of Mahoba by Pírthiráj of Delhi.	Inscription of Pírthiráj (unpublished).

Inscriptions of the Chandel Dynasty of Bundelkhand.

No.	Inscription.	Date.		Reference.
		Samvat.	A. D.	
1	Chaturbhuj.	1011	954	The inscription is on a large slab built into the wall on the right side of the entrance to the Chaturbhuj temple at Khajuráho. It has never been published nor translated. Noticed in Arch. Report, II, 426.
2	Jinanáth.	1011	954	On left jamb of door of Jinanáth's temple at Khajurábo. Never published nor translated in full. Abstract translations in Arch. Report, II, 433 and J. A. S. B. XXIX, p. 395. See also J. A. S. B. XLVIII, Part I, p. 287 and plate.
3	Nunama, No. II.	1055	998	Copperplate; original in Indian Museum. Transcribed and translated in full in J. A. S. B. XLVII, pp. 80 seqq.
4	Lálájí or Viśvanáth.	1056	999	On a large slab built into wall inside entrance of Lálájí or Viśvanáth temple at Khajuráho. Translated by Mr. Sutherland in J. A. S. B. for 1839. Vol. VIII. p. 159, but with many errors, some of which were corrected by General Cunningham in Proc. A. S. B. for 1865 (1) p. 99.
5	Nunama, No. I.	1107	1050	As No. 3.
6	Deogarh.	1154	1097	Engraved on rock. Neither published nor translated; referred to in Arch. Report, IX, 108.
7	Inscription at Mahoba.	—	—	Gave genealogy from Dhanga to Kírtti Varmma. Mentioned in Arch. Report, II, 447, but never published nor translated, and the original not now to be found.
8	Supplement to Lálájí inscription.	1173	1116	As No. 4.
9	Maisey's No. IV.	1188	1131	Original at Kálinjar, near figure of 'Mahádeo ká putra'; letters very faint. Transcribed and translated in J. A. S. B. XVII. (1) pp. 191 and 321-322. Text and translation require revision. Erroneously mentioned dated in S. 1288 in Arch. Report, II, 448, number 33.
10	Angási.	1190	1133	Copperplate; original with Mr. A. Cadell, C. S. Facsimile and transcript and translation in J. A. S. B. Vol. XLVII, Part I, pp. 73 seqq.
11	Nemináth.	1211	1154	Jain Statue at Mahoba. Noticed by General Cunningham in Arch. Report, II, 448. The position of the statue is not known.

No.	Inscription.	Date.		Reference.
		Samvat.	A. D.	
12	Sambhunáth.	1215	1158	Jain statue at Khajuráho. Translated in Arch. Report, II, 435 and noticed *ibid.* p. 448. Position of statue now is not known.
13	Sambhunáth.	1215	1158	Jain statue lying in water under embankment of Kírat Sagar at Mahoba. Facsimile of part of inscription in J. A. S. B. Vol. XLVII, Part I, Plate XV.
14	Ajitanáth.	1220	1163	Jain statue at Mahoba, position not now known. Noticed in Arch. Report, II, 448.
15	Man-Chhatarpur.	—	—	Translated by Lieut. Price in Asiatic Researches, XII, 351.
16	Kondalpur. (?)	? 915 of Chedi era.	1164	Mentioned as existing at a temple in Kondalpur, Central Provinces, and said to be dated 815 Samvat by Sir Wm. Sleeman in J. A. S. B. for 1837. Vol. VI, (2), p. 627 note. *Vide supra* discussion of reign of Madana Varmma.
17	Mahoba.	1224	1167	Inscription at Mahoba, mentioned in list Arch. Report, II, 448, but nature of inscription and precise locality not mentioned. Original not now forthcoming.
18	Maisey's No. I.	? 1228	? 1171	J. A. S. B. XVII, (1) pp. 313-317. Gazetteer N. W. P. Vol. I, p. 15 note. Arch. Report, II, 448. Original at Kálinjar.
19	———	1239	1182	Unpublished inscription of Prithiráj, referred to by Genl. Cunningham, Arch. Report, IX, 153, and in private letter-records defeat of Parmál by Pirthiráj.
20	Mahoba, inscription at bungalow.	1240	1183	Abstract given in Proc. A. S. B. for 1879, p. 243. Original at Engineer's bungalow near Mahoba. Full text and translation not yet published.
21	Dahi copper plate.	1337	1280	Arch. Report, II, 455. In No. 34 of table *ibid* p. 448, the name of the Rájá is wrongly given as Víra Varmma. Neither original nor copy forthcoming, nor translation.
22	Jayadurga, (? Ajegarh or Kálinjar) Inscription.	1345	1288	J. A. S. B. VI, 881, and Part III of this essay.
23	Maisey's No. II.	—	—	J. A. S. B. XVII, (1) 317-320, transcript and translation; original at Kálinjar. No date; but quoted in No. 36 of table Arch. Report II, 448 as being dated S. 1372 = A. D. 1315.

Abstract of Part III.

The statement of General Cunningham and other writers that Kutb-ud-dín Aibak attacked Kalinjar twice, that is to say, in 1196 A. D. as well as in 1202 A. D., is shown to be erroneous and to rest on a misinterpretation of Farishta.

The passages in Farishta and the contemporary Táj-ul-Maásir relating to the attack on Rájá Parmál Chandel in 1202 A. D. are quoted and discussed, and Chand's stories about the end of Parmál are proved to be untrue.

The Mahoba Kanungo's traditions relating to the events which followed the defeat of Parmál by Prithiráj in 1182 and the rise of the Bundelas in the 14th century are recited at length as a basis for the following disquisition.

The evidence relating to the existence of powerful Bhar chiefs at Mahoba and in the neighbourhood of Kálinjar is fully discussed, with the result that the Bhar rule in Bundelkhand may be dated approximately between the years 1240 and 1293 A D. The identification of the Dalaki-Malaki or Dalaki-wa-Malaki who was, according to the Muhammadan historians, defeated by Ulúgh Khán in 1248 A. D., with the Tiloki and Biloki or Dal and Bal of Audh tradition is accepted, and this personage is further identified with the Bhar chieftain in power at the time.

The identification of Dalaki-Malaki with the Malika of the Jayadúrga (or so-called Ajegarh) inscription dated 1345 Samvat is rejected.

His identification with Rájá Trailokya Varmma Chandel is also shown to be impossible.

The conjecture is hazarded that the Bhars were originally one of the hill and forest tribes of Central India.

The genealogy of the Chandel princes who succeeded Parmál as Rájás of Kálinjar is discussed in connection with General Cunningham's notice of Col. Ellis' Dahi copper plate inscription dated S. 1337.

According to tradition the Bhar rule at Mahoba was overthrown by a Musalmán attack. Reason is shown for believing that this attack probably occurred in the year 1293 A. D., when Alá-ud-dín defeated the Hindús of Bhilsa.

About that time the government of Mahoba appears to have been entrusted by the Muhammadans to the Khangárs of Garh Kurár.

The Khangárs were displaced by a Gaharwár adventurer, the date of which event is shown to be approximately 1340 A. D.

From this Gaharwár adventurer the Bundelas are descended, being apparently the offspring of a marriage between the Gaharwár and a Khangárin.

The following chronological table summarizes the results of the investigation.

Chronological Table 1182—1352.

Event.	Date. Hijri or Samvat.	Date. A. D.	Reference.
Defeat of Parmál by Prithiraj, ...	1239 S.	1182	Unpublished inscription of Prithiraj. (Cunn.)
Capture of Kálinjar, Kálpí and of Mahoba "capital of the principality of Kálpí," by Kutb-uddín Aibak, ...	599 H.	1202	Farishta and Táj-ul-Maásir.
Death at Kálinjar of Rája Parmál Chandel,	..	..	Táj-ul-Maásir.
Accession at Kálinjar of Rája Trailokya Varmma Chandel, ...	..	..	Dahi copper plate.
Mahoba held successively by Taur Súba, the Mewátís and the Gond, ...	..	circa 1203 to 1239	Mahoba tradition.
Capture of Gwáliar and defeat of Parihár Rája by Altamish, ...	630 H.	1232	Ferishta and Táj-ul-Máasir.
Accession at Kálinjar of Sandhira Varmma Chandel, ...	62	circa 1234	Conjecture and Dahi copper plate.
Defeat of Chahada Deva of Narwar, ...	632 H.	1234	Tabaqát-i-Násiri.
Occupation of Mahoba by a Bhar chief, ..	..	circa 1240	Tradition and conjecture.
Occupation of Mauze Bharwára in Pamvári by Lodhis during reign of Rája Bhar of Mahoba, ...	1300 S.	1243	Local tradition.
Occupation of villages on bank of Dhasán river by Parihárs from Gwáliar, ...	1303 S.	1246	Local tradition.
Kírat Pál Rája at Kálinjar, ...	1309 S.	1252	Mahoba tradition.
Foundation of shrine of Pír Mobárik Sháh at Mahoba, ...	..	..	Ditto.
Defeat of Dalaki-Malaki between Karra and Kálinjar by Ulúgh Khán, ...	645 H.	1248	Farishta and Tabaqát-i-Násiri.
Ulúgh Khán 'marches towards' Kálinjar, ..	..	1251	Tabaqát-i-Násiri.
Rája Sandhira Varmma Chandel makes a grant of land, ...	1337 S.	1280	Dahi copper plate.
Rája Kírat Singh Bhar makes at Kálpi a grant of land in Mahoba, ...	..	..	Copy of *sanad* belonging to Kanungo of Mahoba.
Rája Bhoja Varmma Chandel, probably at Kálinjar, ...	1345 S.	1288	Jayadúrga inscription.
Nána Káyatt his minister, ...	..	..	....
Ala-ud-dín's expedition against the Hindus of Bhilsa, ...	692 H.	1293	Farishta.
Defeat of the Bhar Rája of Mahoba by Malik Hasn Sháh, ...	..	ditto (?)	Local tradition.
Khangárs of Garh Kurar appointed governors of Mahoba by Delhi court, ...	..	circa 1300	Local tradition.
Conquest of Málwa by Ain-ul-Mulk Multání, ...	704 H.	1304	Farishta.
Erection of mosque at Bhainsa Darwaza, Mahoba, in reign of Ghiyás-ud-dín Tughlak, ...	722 H.	1322	Inscription on mosque.
Khangárs of Garh Kurar and Mahoba overthrown by a Gaharwár adventurer, founder of Bundela clan, ...	1400 S.	circa 1340	Tradition.
Malik-us-Shark Nasír-ul-Muik governor of Mahoba, Karra and Dalaman, ...	..	circa 1352	Tarikh-i-Mobárik-Sháhí.

4. *English Translations of some Balochi Poems. Part II.*—*By* M. Longworth Dames, Esq., C. S.

This paper will be published in the Journal, Part I.

5. *Coins Supplementary to Thomas' Chronicles of the Pathan Kings of Delhi. Part II. With two Plates.*—*By* Chas. J. Rodgers, Esq., *Principal of the Normal College, Amritsar.*

(Abstract.)

This paper is a continuation of the author's article, which was published in No. 2 of the Journal of this year. It describes 33 hitherto unpublished coins, beginning with Khusrau Malik; among them several gold and silver coins.

This paper will be published in the Journal, Part I.

6. *Copper Coins of Akbar. With two Plates.*—*By* Chas. J. Rodgers, Esq., *Principal, Normal College, Amritsar.*

(Abstract.)

This paper describes 28 copper coins of the Emperor Akbar. The author discusses the value of the coins called *dám* and *tanke* respectively, and comes to the conclusion that 200 tankes and 160 dáms must have been severally equal to 1 Rupee. Accordingly he calculates, that Akbar's revenues must have been equal to Rs. 32,000,000 or £3,200,000, according to the statement of Nizám-uddín, or to Rs. 35,400,000 or £3,540,000 according to Abu'l Fazl; a calculation which differs widely from that of Mr. Thomas who gives £32 millions and £86 millions respectively.

This paper will be published in the Journal, Part I.

7. *Notes on and Drawings of the Animals of various Indian Land-Mollusca* (Pulmonifera).—*By* Lieut.-Col. H. H. Godwin-Austen, F. R. S., F. Z. S.

For some years previous to his appointment to the Second Yarkand Mission, Dr. Stoliczka had been working at the anatomy of Indian land-mollusca, and had enriched this Journal with many valuable papers. Amongst the numerous drawings made by native artists under his superintendence were found, after his death, some excellent coloured sketches from life of the animals of various species, with descriptions of the colours of the soft parts written in pencil on the margins of the paper. The author has pasted these drawings in a scrap-book, and, as they were fast becoming illegible, has transcribed the notes, names, and localities as well as he was able to decipher them.

As it may be some years before many of these species are obtained again by a naturalist with the means and ability correctly to delineate

them, the author has thought that lithographed copies published in this Journal would be not only preserving, but in a measure continuing the labours of so good an observer, and has accordingly prepared two plates illustrating certain species of the family *Zonitidæ*. Stoliczka's identifications and remarks are given in full for each species figured in the present paper, and some notes from the author's field-book, with a few identifications of Messrs. Blanford and Nevill, have been added.

The paper will be published in full with two plates in the forthcoming number of the Journal Part II.

8. *On a Species of* Trochalopterum *from Travancore.—By* W. T. Blanford, F. R. S.

In this paper the author describes a new species of *Trochalopterum* obtained by Mr. F. W. Bourdillon in the S. Travancore Hills. The species, which is named *T. meridionale*, is distinguished from *T. Fairbanki*, its nearest ally, by the much shorter white superciliary stripe terminating above the eye, by there being no brown band behind the eye, by the middle of the abdomen being white, and by other characters.

The paper will be published in the Journal, Part II, No. 3, for the current year.

9. *On a new Species of* Papilio *from South India, with remarks on the Species allied thereto.—By* J. Wood-Mason.

In this paper the author describes a new species of rhopalocerous *Lepidoptera* belonging to the genus *Papilio*. The new species is nearly allied to *P. Mahadeva*, Moore, from upper Tennasserim, and is distinguished therefrom by having a submarginal row of spots in the fore-wing in both sexes, and by other characters; it is named *P. Dravidarum*. The paper concludes with some general remarks on allied species; it will be published with illustrations in the forthcoming number of the Journal, Part II.

10. *Description of the Female of* Hebomoia Roepstorffii.—*By* J. Wood-Mason.

The male of this species was described in the last number of the Journal. For the opportunity of describing the opposite sex, the author is indebted to the kindness and courtesy of Captain G. F. L. Marshall, R. E.

Coloured figures of both sexes will eventually be published in the Journal.

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The following additions have been made to the Library since the Meeting held in August last.

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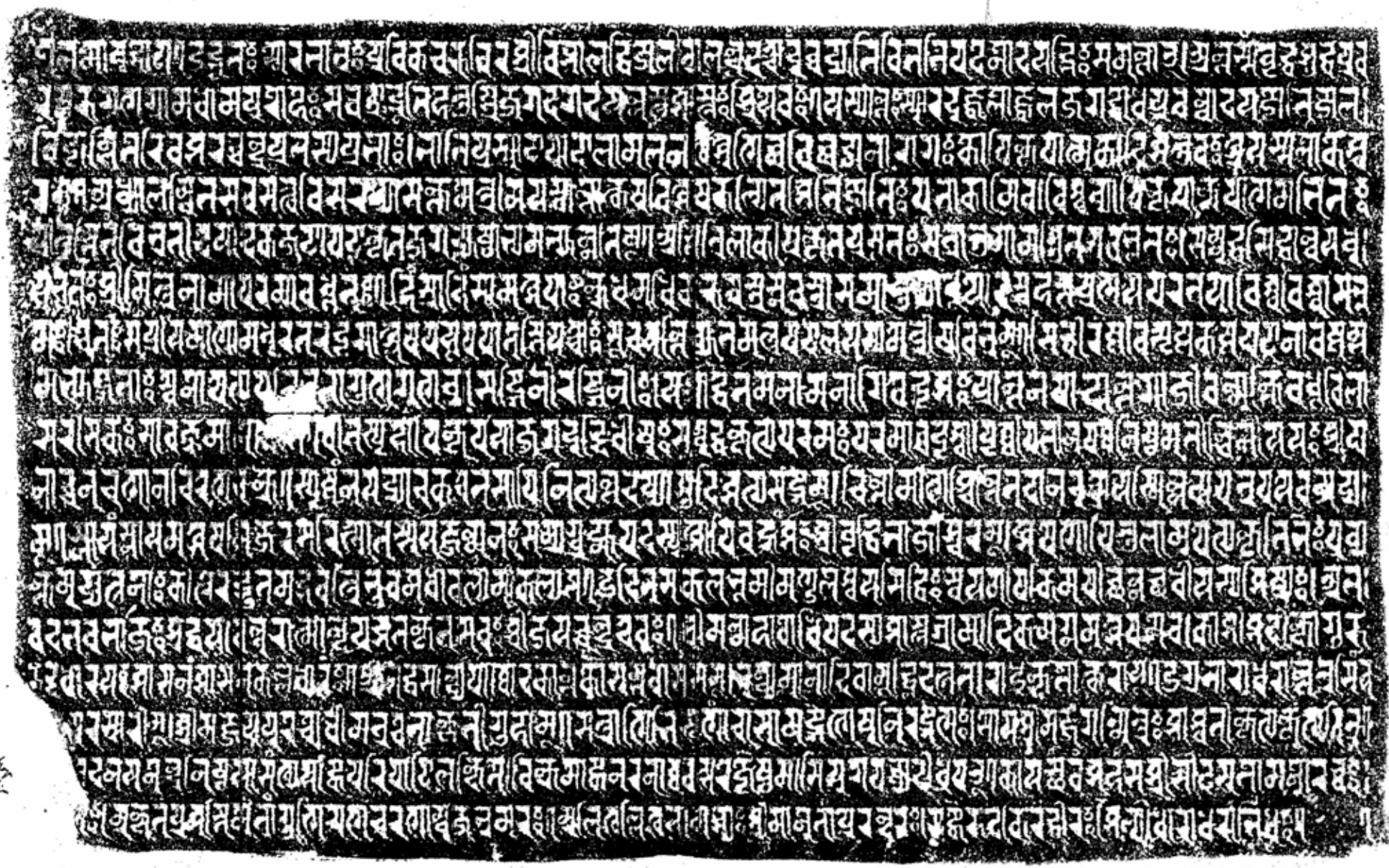
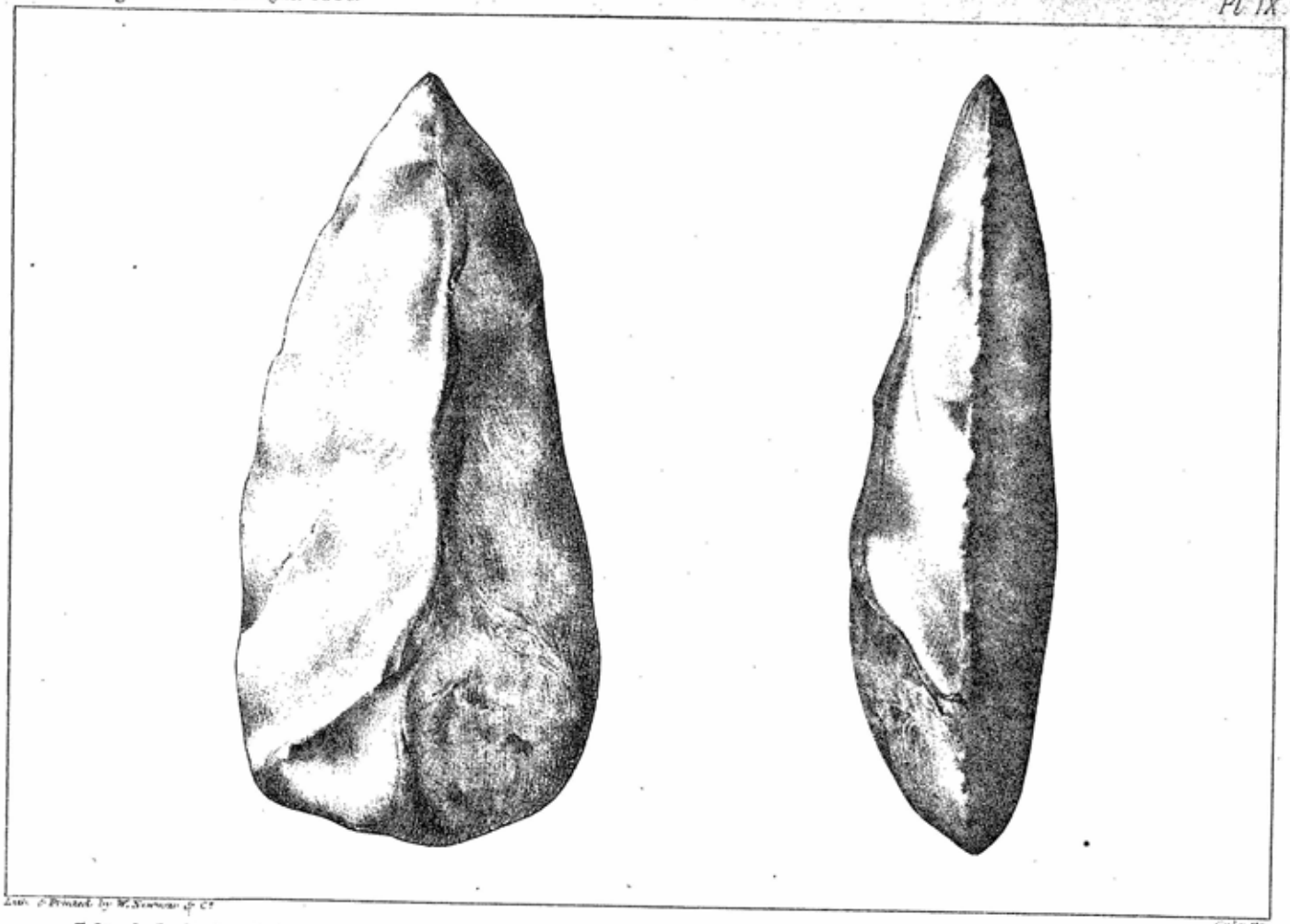


Buddha Gaya Mission

PHOTOZINCOGRAPHED AT THE SURVEYOR GENERAL'S OFFICE, CALCUTTA.

FACSIMILE OF AN INSCRIPTION FROM BUDDHA GAYÁ.



Celt of the Palaeolithic Type, discovered at Thandiani, Punjab, by Charles Francis Massy Swynnerton, September 10th, 1880. Elevation, 8,400 ft. Original size.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR DECEMBER, 1880.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 1st December 1880, at 9 P. M.

H. B. MEDLICOTT, Esq., F. R. S., President, in the Chair.

The minutes of the last Meeting were read and confirmed.

The following presentations were announced—

1. From the British Museum,—Catalogue of Oriental Coins, Vol. V, by S. L. Poole, edited by R. S. Poole.

2. From the Surveyor General of India,—Synopsis of the Results of the Operations of the Great Trigonometrical Survey of India, Vols. VIII and IX.

3. From the Home, Revenue and Agricultural Department,—the Industrial Arts of India, by Dr. G. C. M. Birdwood.

4. From the Superintendent, Government Central Museum, Madras, —10 gold Viraraya Fanams.

5. From the Superintendent, Geological Survey of India,—Popular Guide to the Geological Collections in the Indian Museum, Calcutta. No. 3—Meteorites, by F. Fedden.

6. From the Author,—a Collection of Gesture-signs and Signals of the North-American Indians, with some comparisons, by Lt.-Col. G. Mallery.

The following Gentlemen duly proposed and seconded at the last meeting were balloted for and elected Ordinary Members—

W. Grierson Jackson, Esq., C. S.

Moulvie Dilawar Hasein Ahmad.

J. R. Napier, Esq.

H. W. McCann, Esq., D. Sc.
Dr. Kirton.
R. D. Oldham, Esq., A. R. S. M.

The Secretary reported that the following Gentleman had intimated his desire to withdraw from the Society—
W. T. Webb, Esq.

The Secretary reported that the elections of Rája Siva Prasád and of Mr. W. P. Johnston had been cancelled under Rule 9.

The Secretary read a letter from the Rev. C. Swynnerton forwarding a sketch of a sculptured stone pendant, with a note on the same.

Mr. Swynnerton writes:

"I beg to enclose a rough pencil-sketch of a curious relic which I find among my specimens of Yusafzai sculpture. If you will kindly exhibit it to the meeting of the Society I shall feel greatly obliged.

"Last winter I visited two very singular boulders in the neighbourhood of the Indus at Attock. One is of granite, the other of limestone. They are enormous in size, and they both exhibit 'cup-marks' or 'elf-cups' on their upper surfaces. These marks are very perfect and some of them are in regular lines. The granite specimen was first seen by Mr. T. Barlow, of the Inland Revenue, the other of limestone was discovered by me.

"I shall be glad to send you, later on, sketches and descriptions of these two relics if the Society would care to have them."

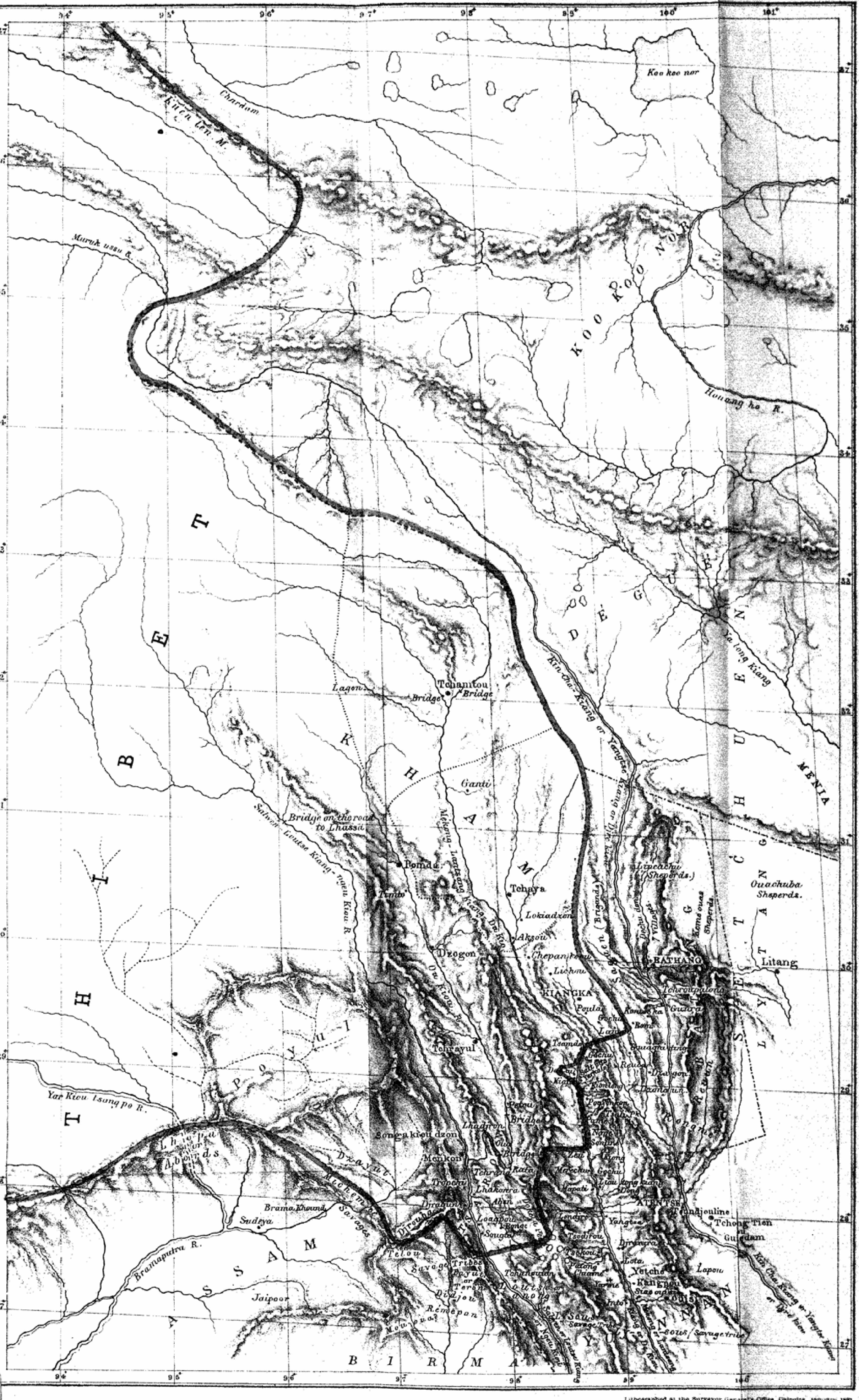
The sketch sent was of a sculptured pendant or jewelled ornament worn from the neck, and was the size of the original. The sketch was taken from a piece of sculpture, in slate, which belongs to the ancient Buddhist remains of the Yusafzai valley. Attention was directed to the winged Cupid with which the ornament terminates. The figure is that of a boy. The hands have been broken, but they appear to have been joined together in the usual position of prayer, or adoration, so common among these sculptures. Mr. Swynnerton is doubtful whether there is any such idea of Eros or Cupid, winged, in Hindu mythology, or whether this figure is another proof of the former influence of Greek art in the Punjab.

The Natural History Secretary then exhibited some specimens of *Papilio* from South India, representing a new species *P. morgani.*

The following papers were read—

1. *Description of a new species of Brackish-water Mollusca.*—*By* G. Nevill, C. M. Z. S.

This paper will appear in the Journal, Part II.



EASTERN FRONTIER OF THIBET BY M. DESGODINS.

Lithographed at the Surveyor General's Office, Calcutta, January 1891.

2. *On the Eastern Frontier of Thibet.*—*By* M. Desgodins.

The western and southern boundaries of Thibet proper are well known, because they are adjacent to the English Indian empire, either immediately or mediately through the states of Cashmire and Ladak, Nepaul and Sikkim which are allies of the English Government. The northern boundary too is very well defined, being formed by the immense tract of mountains known under the Chinese name of Kuenlen. This range begins westwards at the Karakorum, and runs to the east as far as the Kookoonor mountains. The eastern boundary on the other hand is almost unknown because it has been drawn through a country inhabited by people of the same race who are subjected to the same Chinese government though in a different manner. This then is a geographical problem of great interest and importance, and, as I have lived for some period in this almost unknown land, I will endeavour to give all the information on this subject I have been able to collect.

Let us start from a well known and indisputable point, the upper Assam country encircled by the Himalaya mountains. At the north-east of the valley, just beyond the Bramakhund on the hills, you find the savage tribe of the Mishmis whose Thibetan name is Nahong. As soon as you have crossed over the Himalayas and the Mishmi tribe, going to the east, you reach the frontier of Thibet proper. This is the district or Subprefecture of Dza-yul, which is under the jurisdiction of the Deba or prefect of Song-nga-kieu-dzong. This prefect governs also two other districts, that of Djrooba, which is exclusively peopled by shepherds living under tents, and that of Tsarong which is well peopled, and which is at the mouth of the Ou-kio river where it flows into the Lou-tse-kiang, and extends further down on the two banks of the Lou-tse-kiang (the Ngeu-kio of the Thibetans and the Salwen of the Europeans). The prefecture and its three subdivisions are to be found in that tract of land which extends from the foot of the Mishmi Himalaya to the Salwen and from 28° to 29° N. latitude; Dzayul is at the east, Djrouba to the south, Tsarong to the south-east, Song-nga-kiendzong to the north-east. They say that this country is relatively well peopled and rich. To the south of Dza-yul and Djrouba are numerous savage, independent tribes belonging to the basin of the Irrawaddy river. To the north, is the principality of Po-yul which does not at all acknowledge the Lhassa government, and very little of the authority of the Chinese government; they would not be reluctant to have commercial intercourse with Europeans if they could. To the south of Tsarong, on the banks of the Salwen is the small Lou-tse tribe which belongs to the Yun-nan Chinese province. If I dwell somewhat at length on this country, whose area comprises only a little more than one degree of latitude and longitude, it is because of its being the only way through which the great river of

Thibet, the Yar-klou-tsangpo can flow if it goes down to the Irrawaddy. I have, however, been told over and over again by natives well acquainted with the country, that there is no large river flowing through it but only small ones. If so, the Tsangpo cannot be the upper course of the Irrawaddy.

A little below 28° N. lat. the frontier of Thibet crosses the Lou-tse-kiang (Salwen), and ascending a very steep spur on the left bank, reaches the main ridge of the mountain range, which separates the Salwen from the Mekong, which is called Lan-tsang-kiang by the Chinese and Dakio by the Thibetans. This range is very narrow, steep, and rocky, the rivers being at a height of about 6000 feet, the passes more than 12,000 feet, and the numerous snowy peaks from 18,000 to 20,000 feet above the sea. Its direction is south to north inclining a little to the west. One of the more southern snowy peaks, called Dokéla is most important, not only on account of its being a celebrated place of pilgrimage for the Thibetan devotees of eastern Thibet, but also because it may be considered as the most southern boundary of Thibet proper; the true boundary line of the Yunnan Chinese province and of the Thibetan country being only a few miles below the peak.

Some fifty years ago the boundary wall followed the ridge of the main range as far to the north as 29° 20′ N. Lat., but owing to the encroaching propensities of the Thibetan government, to the weakness of the Bathang chief, and perhaps to the wickedness of some Chinese official, the Thibetans took possession of the eastern declivity of the mountain from the 28° 30′ up to 29° 20′, so that the Mekong itself becomes the frontier. We must, however, except the two villages of Kiata and Dachu situated at 29° 02′ on the right bank, which are kept by Bathang and China, on account of the salt-pits which, on both banks of the river, are the centre of an extensive and fruitful trade. On the left bank, the Yun-nan province reaches nearly to 29° N. Lat., and then comes the territory governed by Bathang which is part of the Se-tchuen province.

About 29° 20′ the boundary crosses to the left bank of the Mekong, ascends a branch of the chain of mountains up to the main range, then, following a direction east-north-east, passes between the two villages of Bom and Lanten, the first being the last village of the Bathang territory, the second being the first of Thibet proper, both being on the high road which goes from China to Lhassa through Ta-tsien-loo, Lythang, Bathang, Kiangka, etc. This last small town which is nearly due west of Lanten is the residence of the Tiguié or Governor-General of the Kham province. Previous to the beginning of the 18th century, this province extended as far as 102° or 103° E. Long. At that time an attempted rebellion of the Thibetan Lamas having been quickly put down by a Chinese army, the consequence was, that the twenty-two Eastern Thibetan prin-

cipalities were united to the direct government, either of the Se-tchuen or of the Yun-nan province

From about the 30th degree N. Lat., the boundary of Thibet runs northwards between the Mekong and Kin-cha or Yangtse rivers; but as the steep, narrow, well-defined ranges of mountains which we encountered south are succeeded northerly by undulating table-lands the boundary is not so well traced as below. This is a perpetual cause of disputes and riots between the shepherds of Bathang and those of Thibet. However, geographically, we can draw the boundary of Thibet by following the watershed as far as 33° N. Then it turns to the north-west as far as 35° N. lat. and 95° E. Long. where it crosses the Yang-tse. From this point it takes a north-easterly direction till it reaches the mountains encircling Kookoonor, and the main range of the Kuen-len mountains. East of this boundary is, 1st, the principality of Bathang, and 2nd, more to the north, that of Dégué, both under the direct administration of Se-tchuen. West of the same limit and north of Kiang-ka, are the principalities of, 1st, Tchraya; 2nd, Tchamtou; 3rd, San-che-kieou-tso; 4th, Réoukhié; 5th, Nongkine. *By right* these five principalities do not belong to Thibet proper whose civil government they do not acknowledge. They have chiefs of their own under the direct superintendence of the third Chinese ambassador residing at Lhassa. It would have been nothing but just, if from the 30th degree N. Lat. I had drawn the eastern boundary of Thibet proper about two degrees longitude more to the west. However I do not regret having shown myself more generous, first, because these five principalities have not been put under the direct administration of Se-tchuen; secondly, because their real Chinese governor is residing at Lhassa; thirdly, because *in fact* the civil Thibetan government of Lhassa, being more powerful, behaves there nearly as the lion of the fable.

Before closing this note I may add that east of the eastern frontier of Thibet proper there is an area of at least four degrees of Longitude and six degrees of Latitude, which is peopled by the Thibetan race, under the direct Chinese administration. From this most certain fact, some consequences could be drawn, but as they are beyond the dominion of geography I refrain from mentioning them.

M. Desgodins concluded by saying that the real eastern boundary of Thibet proper was that which he had just given and which was indicated in the map which he had prepared. The map will be found at Plate X.

The President said that M. Desgodins had conferred a great favour on the Society by giving the results of his extensive experience in an almost unknown region, and he was sure that the information which he had laid before the Society would prove of the utmost value. In the course of his remarks, Mr. Medlicott asked—

Whether some of the Thibetan countries directly governed by China bordered on the province of Assam, to which M. Desgodins replied that such was not the case, the whole of Assam being encircled to the north and east not only by savage tribes, but also by districts directly governed by the Lhassa government, but that being part of Thibet proper they were, *ipso facto*, tributaries to the Chinese Empire.

General Walker observed that this Society had much reason to be indebted to Father Desgodins for his interesting and very valuable communication. The Father has resided for many years on the confines of Thibet in a region which is of the utmost importance from a geographical point of view, as there a breadth of not more than 4° in longitude is crossed by several rivers, running parallel to each other, which have long been known to be the highland sources of some of the greatest rivers in Asia. Up to the present time, however, there has been considerable uncertainty as regards the individual identity of the rivers in the highlands with those in the lowlands; and until Father Desgodins communicated the information he had obtained about them to the Geographical Societies of Paris and Lyons, there was not a single map in which errors more or less gross had not been committed in the assignment of their sources to the several great rivers. We are indebted to him for the information, recently corroborated by Captain Gill, that the Lou-tse-kiang river, which has been supposed to be one of the sources of the Mekong or Cambodia river, is in reality the source of the Salween river which debouches into British territory in Martaban. Thus the Salween has a course which is generally parallel to that of the Irrawaddy river below the 27th degree of latitude; but whereas the Irrawaddy is believed by most geographers to have its sources not higher than the 28th degree of latitude, the Salween has been conclusively shown by Father Desgodins to have a much higher origin, probably in Lat. 33°, and this is a discovery of great geographical importance.

During a residence of some years at Bathang in the valley of the Kincha or Yang-tse-kiang (Captain Gill's River of Golden Sand) Father Desgodins endeavoured to proceed to Lhassa, but he was unsuccessful in the attempt—as all other Europeans have been of late years. Eventually he moved to the south-west, crossing the valley of the Lan-tsang-kiang or Mekong river, into that of the Lou-tse-kiang or Salween river, in which he resided for three years, about the parallel of 28° of Latitude, and at a distance which he estimates as not exceeding 100 miles from the point where the Brahma Kund river enters upper Assam. Here he was in a very favourable position for making enquiries whether any large river flows through the region between the head of the Assam valley and the valley of the Salween river; this must be the case if the Sanpo, the great

river of Western Thibet, flows into the Irrawaddy, as was formerly supposed, and has latterly been again urged by Mr. Gordon of the Public Works Department in Burma. But the invariable reply to Father Desgodins' enquiries was that there was no such river; and this strengthens the probability that the Sanpo river is one with the Brahmaputra, as has for many years been believed by the generality of geographers, and is in accordance with the latest information obtained by the Trans-Himalayan explorers of the Indian Survey Department.

M. Desgodins then gave some explanations on the point that General Walker had raised as to the great probability of the Tsangpo not being the upper course of the Irrawaddy but that of the Bramaputra: in this opinion M. Desgodins fully coincided.

The reasons which he put forward are these. He had been told that the district of Dza-yul is a rather rich agricultural country: therefore a low one, very likely not exceeding 6,000 feet above the level of the sea. That at the south of this district of Dza-yul there is the district of Djrouba a high uncultivated tableland peopled by shepherds living in tents. If the Tsangpo flowed through Dza-yul (and it could not flow elsewhere) to the Irrawaddy, it would be necessary, for it either to ascend this high tableland, which is absurd, or to flow through an immense cutting or ravine of three or four thousand feet. Though he has had many opportunities of wandering through tablelands in many other places, he has never observed such a feature of plateaux.

2. If there were two high tablelands divided by a large river, this could not escape the notice of the natives of the country. Pagans as well as Christians, who had gone for purposes of trade to Dza-yul, unanimously say there is no large river. Amongst our first Christians were men belonging to several savage tribes of upper Burma. They had been made prisoners of war and sold as slaves to the Thibetans before coming to the missionaries. They also unanimously say that in their own country there are no large rivers. One of them taken prisoner in Assam by the Abords had to cross their country along a large river, which he called Dihong or Dibong (M. Desgodins did not remember exactly which). He thought that it was the Tsangpo flowing through stupendous and fearful precipices.

3. A Lama had travelled all over Thibet on a pilgrimage. He went to worship the sacred lake Tsomapang (Mansarowar of our maps), where the Tsangpo has its source, descended the river as far as Lhassa where he lived for many years, then coming down to Bathang his native country, where he was met by M. Desgodins, he followed again the lower part of the Tsangpo as far as a savage tribe called by Thibetans Lhopa (inhabitants of the south) or Lho-kha-tchra (tattooed inhabitants of the south.) From what he stated about this tribe, M. Desgodins has no doubt they are the

Abords. There the Tsangpo takes a southerly direction, through an awful split of the hills where it flows overhung by fearful perpendicular rocks. This Lama was told by people of the country, that after flowing for some distance through this precipitous channel, the whole of the Tsangpo ended in an immense waterfall, which was so deep that looking from the top to the bottom makes a man's head giddy at once. This Lama held out most stubbornly against M. Desgodins' objections, and maintained that the Tsangpo flowed to the south not to the east, not towards Dza-yul which he knew well, but through the Abord tribe. M. Desgodins observed that all this information from the natives had reference to the country below and above the 28° N. Lat. where the maps generally indicate the sources of the Irrawaddy. M. Desgodins believes this is correct if the native information is reliable, because about this parallel there is a high tableland which separates small rivers to the south and to the north. M. Desgodins thinks it is a water-shed of the Irrawaddy and of a small branch of the upper Bramaputra.

4. In answering the objection that the body of water of the Irrawaddy is so great (at least as great as that of the Salwen) that its sources must be much higher up to the north than the 28° lat. N., M. Desgodins remarked, 1st, that the Irrawaddy beginning by 28° lat. N. is entirely in the zone of very rainy countries, 2nd, that the melting of snow in Thibet sends very little water to the great rivers Salwen, Me'kong and Yangtse. The snow melts at the end of April or beginning of May, at which time the rising of the rivers is only beginning, the great rising commencing only in July and August with the rains. 3rd, M. Desgodins remarked that Capt. Gill, who had pointed out to him the very same objection, acknowledges, 1st, that the Irrawaddy is indeed very large but not very deep, 2nd, that the small river which he followed from Tenyue to Bahmo had suddenly swollen so much in consequence of some rainy days that he understood how the Irrawaddy could have its source only in 28° lat. N., the whole surrounding country being situated in the zone of tropical rains. This observation of Capt. Gill's M. Desgodins could corroborate by pointing out some villages at about 28° lat. N. on the banks of the Salwen and of the Mékong, which are at the very limit between dry and damp countries. There is no middle zone. The cause of this phenomenon is apparently owing to the snowy ranges which, from the 28° lat. N., run in a northerly direction, and stop the rains coming from the Bay of Bengal.

At the conclusion of M. Desgodins' remarks, the President said he had much pleasure in conveying to him the thanks of the Society for the very valuable paper with which he had favoured them that evening.

8. *On the Lepidopterous Genus Æmona, with the Description of a new species.*—*By* J. Wood-Mason.

4. *Contributions to Indian Malacology, No. XII.*—*By* W. T. Blanford, F. R. S.

5. *Report on a visit to Nongyang Lake, on the Burmese Frontier, February* 1879.—*By* S. E. Peal.

6. *List of Mollusca from the Hills between Mari and Thandiani.*—*By* W. Theobald, *Dy. Supdt., Geological Survey of India.*

These papers will be published in the Journal, Part II.

Library.

The following additions have been made to the Library since the meeting held in November last.

Transactions, Proceedings and Journals,

presented by the respective Societies and Editors.

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Carter, H. J.—On the Antipatharia (Milne-Edwards), with reference to *Hydradendrium spinosum.*

Thomas, O.—Description of a new species of *Arvicola* from Northern India.

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No. 196. *Hagen, Dr. H. A.*—On the mode of respiration in the larvæ of the Genus *Euphæa*.

———. Entomologist, Vol. XIII, Nos. 208-209, September and October 1880.

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No. 213. *Hance, H. F.*—Spicilegia Flora Sinensis: Diagnoses of New, and Habitats of rare or hitherto unrecorded Chinese Plants.

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INDEX

TO

PROCEEDINGS, ASIATIC SOCIETY OF BENGAL,

FOR 1880.